TECHNOLOGY DEPT:

Telephone ENGINEER and MANAGEMENT

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Featuring

FALL CONSTRUCTION PRACTICES and NEW PRODUCTS

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Editorial on page 21

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The Cover Picture —

Nimble fingers of trained cable splicers are splicing 2121 paid cable in cable vault of a Jersey City central office. (Photo Courtesy of New Jersey Bell Telephone Company.)

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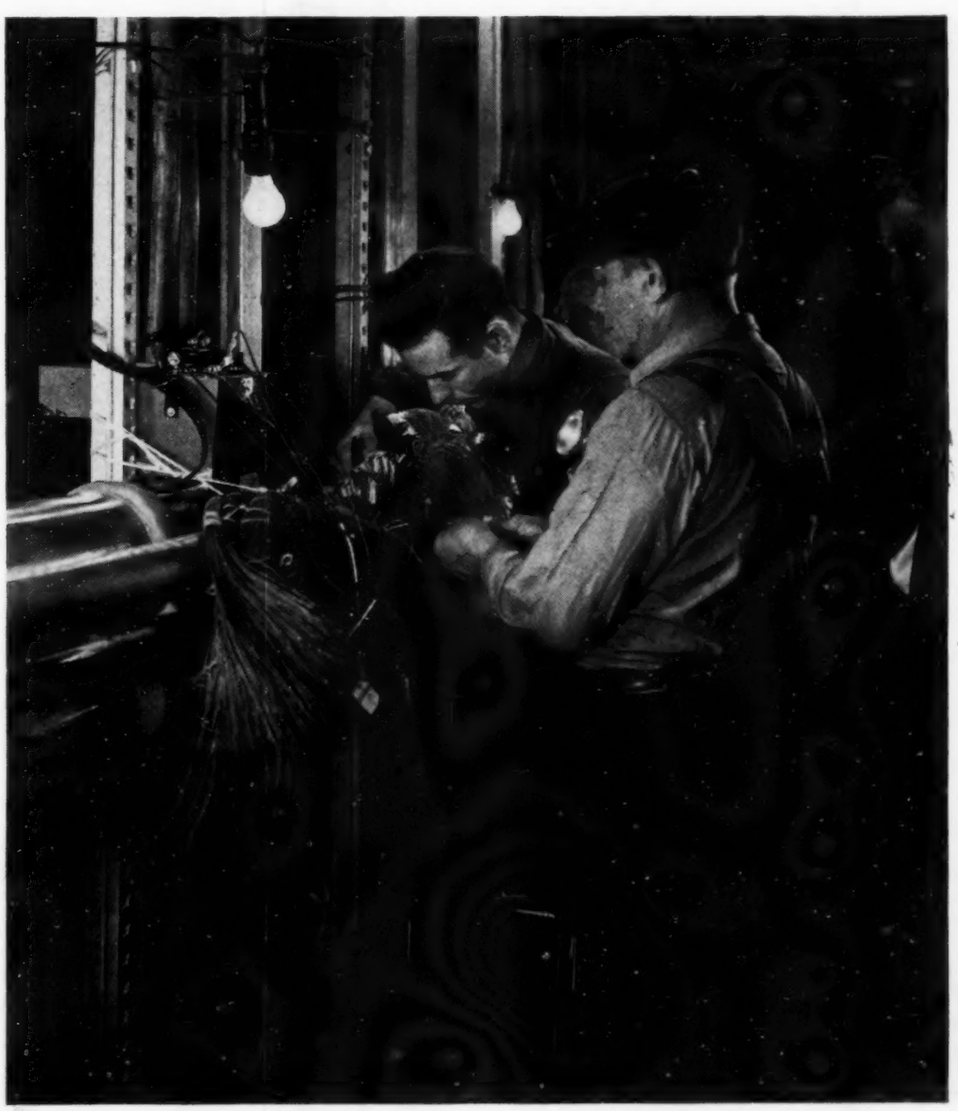
TELEPHONE ENGINEER Publishing Corporation, 7720 Sheridan Road, Chicago 26, Illinois



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On September 4, 1884—only 8 years after Bell received his patent—telephone communication was established between Boston and New York. This event was significant, not simply because of the 235 miles covered, but chiefly because of the vast improvements in equipment which made such distance possible. Transmitters and receivers were much more effective and the "iron wires"—single wires with a "ground return"—had been replaced by copper wires in pairs.

The new industry was moving onward with long and longer strides. Even at that early day the telephone was in use in every state and in all territories but one. The fast pace set in those early days is still maintained. Telephone progress never ends. One great achievement is followed by another even greater . . . in strict conformance with the telephone tradition of faithfulness and dependability.

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Jay G. MITCHELL'S *Commentary*

Editor's Notice: The opinions expressed herein by Jay G. Mitchell are his own. The Editor reserves the right to disagree with any of them, editorially or otherwise in the columns of this publication at any time.

INTRODUCTION: This column is for the purpose of presenting discussion-provoking ideas that seem to offer the possibility of leading to constructive results. It will also "view with alarm" upon occasion. Fact rather than fancy will be the usual underlying spring of information. Brevity will be cultivated. Criticism is solicited.

DELIVERIES: The shortage of many materials is desperate. Authorities agree that this shortage in many lines springs from causes beyond control of the factories. Shortages in certain metals such as lead, steel, iron, copper and aluminum directly and immediately retard production of telephone equipment. Insistence on delivery out of turn by purchasing operating telephone companies is sure to result in disappointment to the customer and make the recovery of normal manufacturing conditions difficult and costly. Orders filled in sequence at the earliest possible moment, on the other hand, will enable manufacturers to look ahead and make plans to bring production back to a more satisfactory standard. Subscribers demanding service which cannot be established because of the shortages away down the line of production should be advised of the facts by the telephone companies.

UNIVERSITIES: In a recent visit to the magnificent educational plant of Purdue University this commentator realized what an impressive record of achievement in solving the communication problems of a world at war had been set up there and at other centers of learning in the last five years. Young men who will soon be in the drivers' seats of industry were hurrying from class room to class room. War problems of astounding technical difficulty have been solved by young men working as students under skilled supervision in the universities. War communication problems often called for the work of several university departments which would seem to justify this suggestion. Why not establish definite courses in COMMUNICATION and let them lead to the degree of COMMUNICATION ENGINEER? This commentator, through some contact with war time communication problems, believes that adequate support for such a course could be obtained from the armed forces, the telephone industry, including the manufacturers and the universities. At present the student who is planning on the field of COMMUNICATION must pursue his studies in some more or less related course not directly and specifically affording training in COMMUNICATION. The post war public will demand the utmost in the communication field, (new kinds of service), and trained men are needed to supply the technique as well as the executives of the future.

IDEA: In everything there is first an idea. This one is that the interested agencies initiate a movement to bring about a NATIONAL JOINT POLE LINE CODE. Placing telephone circuits on pole lines designed for electric light and power circuits is not always ideal for the telephone circuits. Placing electric light and power circuits on pole lines designed for telephone circuits is usually unsatisfactory to both. Telephone associations, telegraph companies, electric light and power associations, the National Association of Public Utilities Commissioners, the Rural Electrification Administration, the American Telephone and Telegraph Company, Highway Commissions and the Farm Bureaus, along with other interests involved, could work out a set of standardized rules that, with necessary revision when indicated, would relieve the highways of many existing multiple pole lines and reduce the number to be constructed in the future. The science of road building and road maintenance is said to be largely

the science of providing adequate drainage. Multiple pole lines often interfere with drainage. Poor drainage also is a possible source of damage to abutting property.

The public will undoubtedly favor the elimination of multiple pole lines, especially those which are unsightly. The construction and maintenance cost to the wire using interests when joint pole lines are properly designed and intelligently installed will be less than in multiple pole lines. The method or source of initiating action is unimportant. The attainment of a workable result is extremely important in long range planning in a fast moving post war world. Why does not the plant committee of U.S.I.T.A. inaugurate the call for an organizational meeting of all interests that are affected at the forthcoming telephone conventions.

STREAMLINING: This commentator has had the privilege of working for some years in a field of vitally important communication, unrelated, in many ways, to commercial practices. In this field continuous forward progress in effectiveness must, at all costs, be maintained. The public will surely demand, from post war telephone company operations, augmented service in many ways. With a detached viewpoint obtained in such a field where streamlining of operations, even when it hurts, must be adopted, a query is suggested to the telephone industry. The query is this. Why continue inactive association committees in nominal service? It is said that the United States Independent Telephone Association, for example, has a total of about twenty-one such, active and inactive. Work which, in any event, cannot be done by the staff can always be assigned to experts retained for the time actually needed. This would relieve member companies of the drain on their staff man days due to the contribution of the services of their executives for committee work. The future promises to call for the full services of every operating staff in the commercial telephone field to meet post war service demands. The active committees with a record of accomplishment should, of course, be continued.

AMERICAN: An American Citizen passed away a few weeks ago. His political and economic philosophy appears to this commentator to be dangerous and totally unacceptable. However he stands for a type. He came to America an immigrant from a nation practically unknown to most of us except by name. He rose to power in an ever widening field which is known, incorrectly we believe, as "Organized Labor." He commanded, by choice, a modest salary, he was honest, intelligent, clear headed and persistently loyal to his friends. He did not belong in the ranks of the subversive and destructive in the opinion of this commentator. His name was Sidney Hillman. Why should he rate mention in this column? The reason is because he represented a segment of the thought of this country which must be included in any intelligent planning by employing enterprises.

In the welter of conflicting but legitimate viewpoints, interests and achievement goals one fact stands out with commanding clearness. The prime interest of the general public must be given consideration by both management and employes. Failure to so do by either will, it seems to this commentator, result in the ultimate loss of public support. Plans into which such consideration enters, and that seems to be all plans, call for a high type of intelligence and sympathetic understanding.

The emotional approach, often selected, is not the one to achieve results. Patience and farsighted tolerance for the views held by such men as Sidney Hillman is required. Their opinions need not, of course, be adopted but the impact of the thought for which they stand must be recognized and, in this commentator's opinion, must enter into the management plans of telephone companies for the future. In the field of communications, if not else where also, the preservation of the interests of the general public appears to be essential for the retention of public support by both management and employe.

In a recent circular letter issued by the First National Bank of Boston, one of the great financial institutions of America, it is said "It naturally follows, from the essential nature of organized society, that no group through concerted action should have the power to threaten or to interrupt facilities that concern the health, safety or welfare of the nation."

Whether this statement will survive the conditions which seem to be on the way or not it is a starting point. With honest and capable representatives selected by employe organizations and with thoughtful and clear headed men with authority appointed by telephone companies many problems in industrial relations may be solved in advance. This may involve, in some cases, the shifting of cherished lines of authority but as President Cleveland is reported to have once said, "We are confronted with a condition and not a theory."

Jay G. Mitchell

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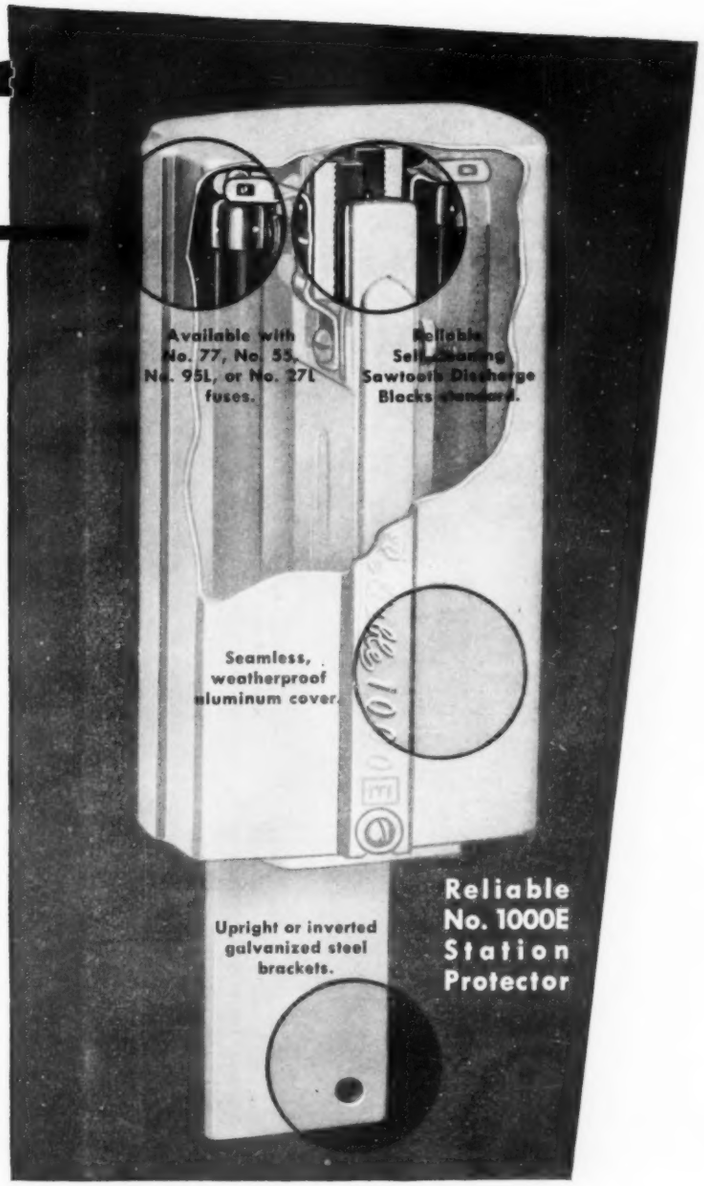
Not only a name, but a performance guarantee of the Reliable Series 1000 Protector. A sturdy, weatherproof unit for protection against static and crosses with electric circuits. Here is maximum sub-station protection without danger of grounding the line—and design simplicity which affords convenience in installation, wiring and servicing. Reliable Self-cleaning Sawtooth Discharge Blocks dissipate static discharges without grounding the line—dirty carbon troubles are eliminated. Binding posts are specially treated to prevent season cracking—fuse clips and carbon springs are made of heavy bronze. Series 1000 Protectors are Underwriters' Laboratory listed and approved. Build for the future—specify Reliable.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Chicago 26, Illinois

In a recent survey of the entire Independent telephone industry (See pages 37-38, July, TELEPHONE ENGINEER and MANAGEMENT) the shortage of materials was the most urgent difficulty of 85% of the companies reporting.

Executives of these companies realize that unsettled labor problems and shortages of vital materials have . . . and . . . are still prime reasons that telephone equipment and supplies are not coming forward in the quantities needed.

Some of these executives have been a bit impatient even as you and I would have possibly been . . . but for the most part they have been pretty reasonable.

However —

They are going to . . . and have every right to expect a steady flow of equipment starting with early spring, 1947, and will find the 1947 TELEPHONE "BLUE BOOK" and BUYERS' GUIDE quite handy in specifying and/or buying the many, many items they have been without during the war years.

"It Seems to Us"

RAY BRIGHT, resident engineer of the Associated Telephone Co., Ltd., San Bernardino, Calif., is a ready market for ideas on how to keep underground cables and conduits from being cut by construction machinery operating in the Lake Arrowhead area. With seven cases of damage occurring which interrupted service between Arrowhead and Crestline for nearly 20 hours, RAY is alert for any ideas that may solve his problem.

•

Congratulations are in order for KEN WAY who on September 9 became sales manager of the A. B. Chance Co., Centralia, Mo. KEN was formerly active in the company's management as assistant to the president of Line Material Co.

•

August issue of THE MICHIGAN BELL gives a brief but to-the-point explanation of the delay in restoration of prewar telephone service by stating: "The difficulties facing Michigan Bell are not exclusive to this company. It is the same whether the company is on the Pacific Coast, the Atlantic, or the Gulf of Mexico. It is also the same whether it is the Michigan Bell or one of the other 164 Independent companies operating in Michigan.

"They are the same difficulties that confront the makers of automobiles, laundry soap, or refrigerators. Michigan Bell has a $150,000,000, five-year, postwar construction program underway. . . . But the date of emergence from the woods, like any other industry, will depend upon how rapidly materials so badly needed will be available for full production."

•

Probably you never realized it, but genial AL TEIFELD, of Copperweld Steel, Glasport, Pa., is a "BIG SHOT" in the National Industrial Advertisers' Association, the country's outstanding advertising association.

AL is an authority on advertising and many of his friends in the telephone industry have found him most helpful on advertising problems. Stick this memo in your book for reference when you need some advertising advice. You'll find AL a good right hand man to know.

Telephone ENGINEER and MANAGEMENT

THE NATIONAL TELEPHONE MAGAZINE

Volume 50 Number 9 Since 1909 September, 1946

Contents

Jay G. Mitchell's Commentary 5
It Seems to Us..... 9
Editorial 21
News Briefs 27
Modern Station Installation 29
By J. S. Reed
Marching Along Together 33
By Otto Wettstein Jr.
Working With Strand Requires "Know How" 37
By F. F. McClair
Washington Reports..... 39
By Roland C. Davies
Coming Conventions..... 40
The Old "Know How"..... 41
By B. C. Burden
Good Signs Identify Telephone Properties 47
By B. C. Burden
Courts & Commissions.. 49
New Products 56
Personalities 64
Line & Desk..... 68
By J. S. Reed Jr.
Letters 73
TELEPHONE ENGINEER Handbook Tables..... 79
Classified Advertising.... 84
Index to Advertisers..... 86

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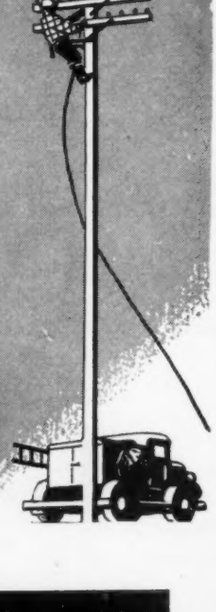
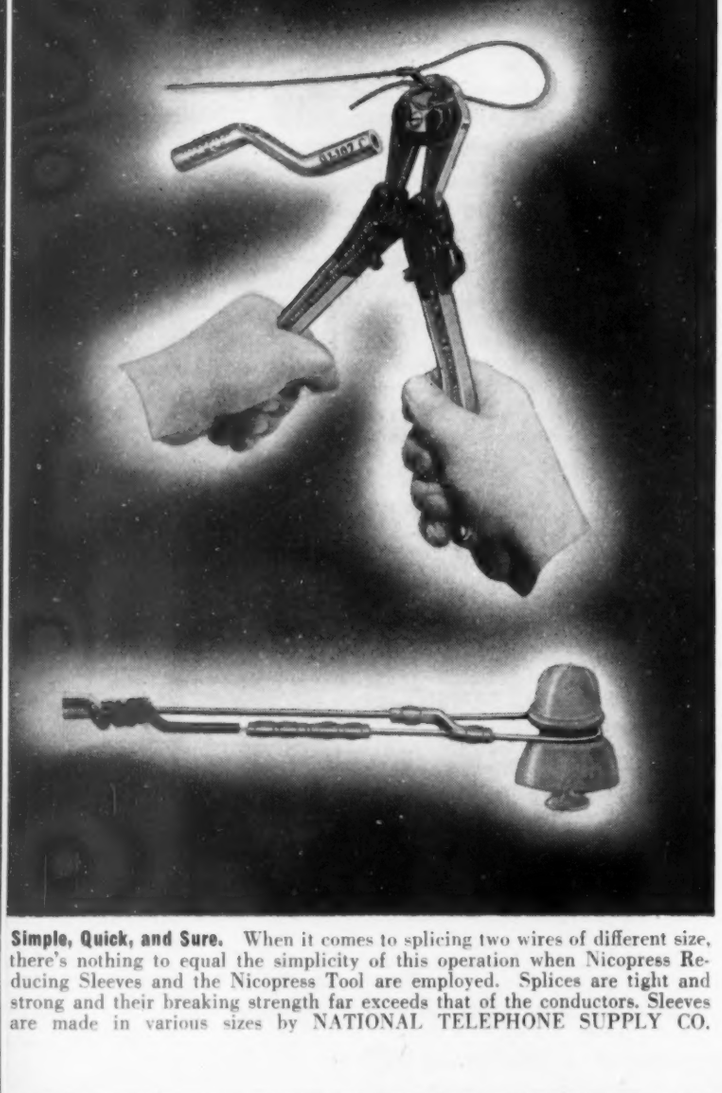
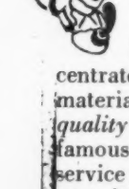


Moisture-proof, Compact, Convenient. The Cook Type "T" Main Distributing Frame permits direct termination of paper wrapped, lead covered cable, and eliminates the need for time-consuming splicing and expensive silk and cotton covered cable. All jumpers are at front of frame for easy installation and tracing. Made by COOK ELECTRIC CO.



Simple, Quick, and Sure. When it comes to splicing two wires of different size, there's nothing to equal the simplicity of this operation when Nicopress Reducing Sleeves and the Nicopress Tool are employed. Splices are tight and strong and their breaking strength far exceeds that of the conductors. Sleeves are made in various sizes by NATIONAL TELEPHONE SUPPLY CO.



There's three-way satisfaction when you concentrate purchases of line supply and construction materials at a single, responsible source: (1) The *quality* is right—all products are backed by the famous Kellogg DOUBLE GUARANTEE; (2) The service is right—orders are intelligently handled by experienced people; (3) *Delivery* is right—orders are shipped from the nearest of over 50 strategically located distribution points.

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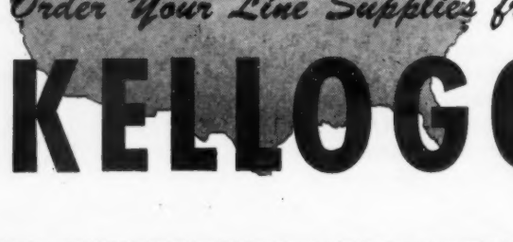

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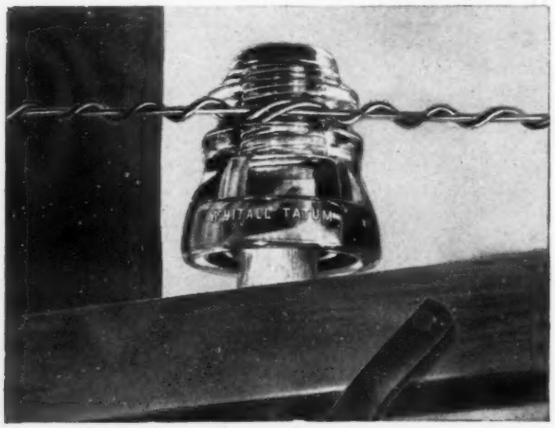
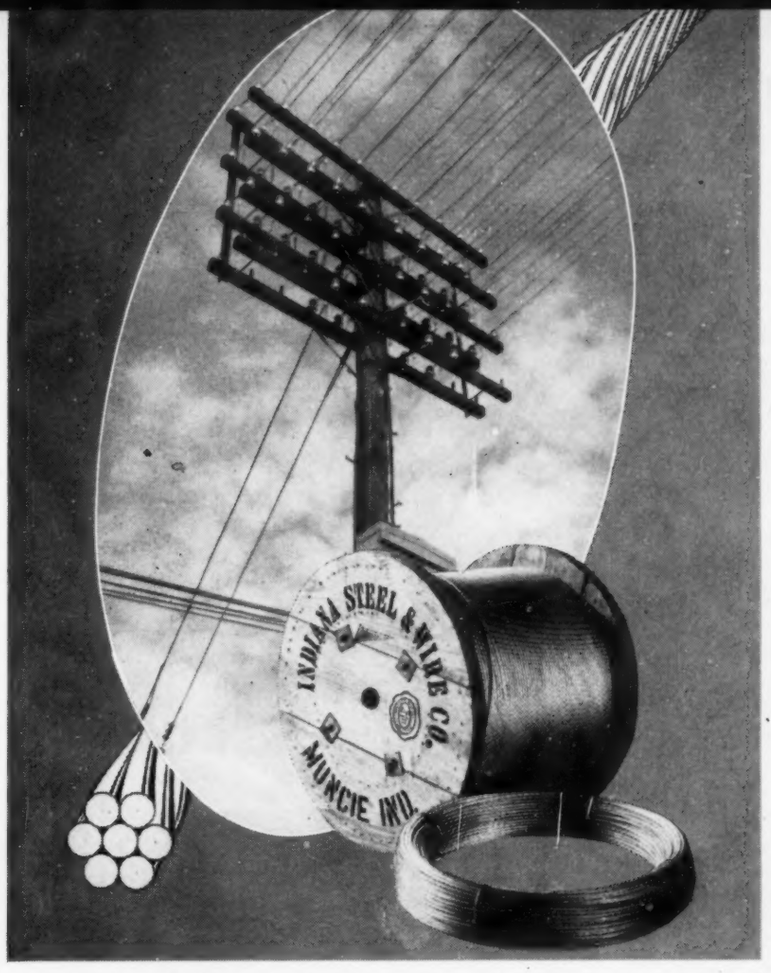


Meet Every Service Need. That's why so many telephone companies use Armstrong's Whitall Tatum Insulators. Made by ARMSTRONG CORK COMPANY, they feature crystal clarity of glass, accurate gaging, and unusual resistance to temperature changes. A good bet for reducing maintenance.



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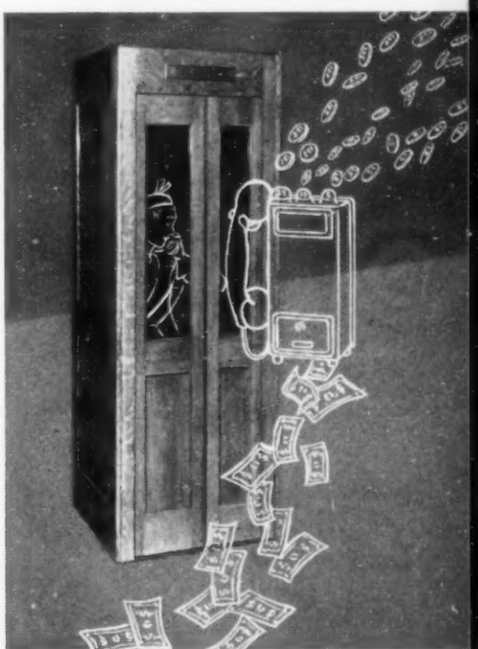
Fits Telephone Needs to a "T". Because Ray-O-Vac Telephone Dry Batteries are built to resist deterioration when not in use, they're especially serviceable for telephone work. Their internal protective coating, developed by RAY-O-VAC CO., extends their useful life, whether used or not. The result is lower costs.



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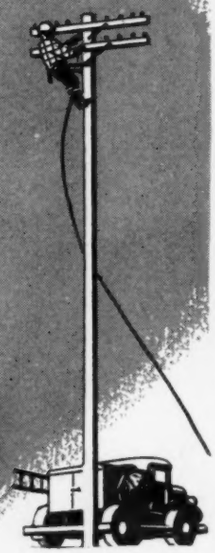
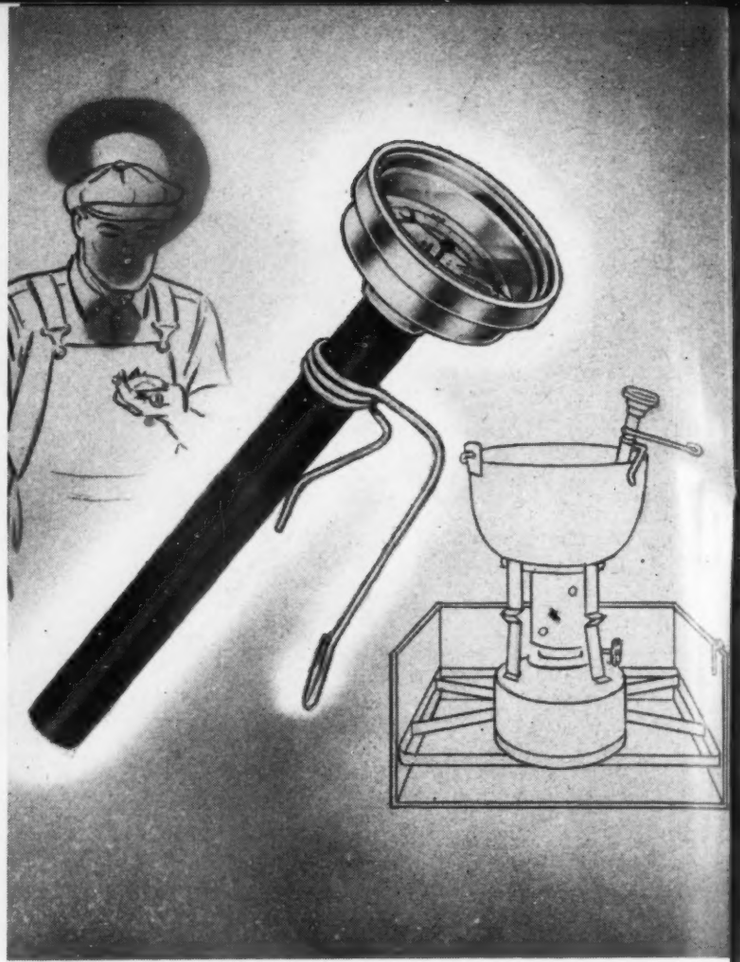
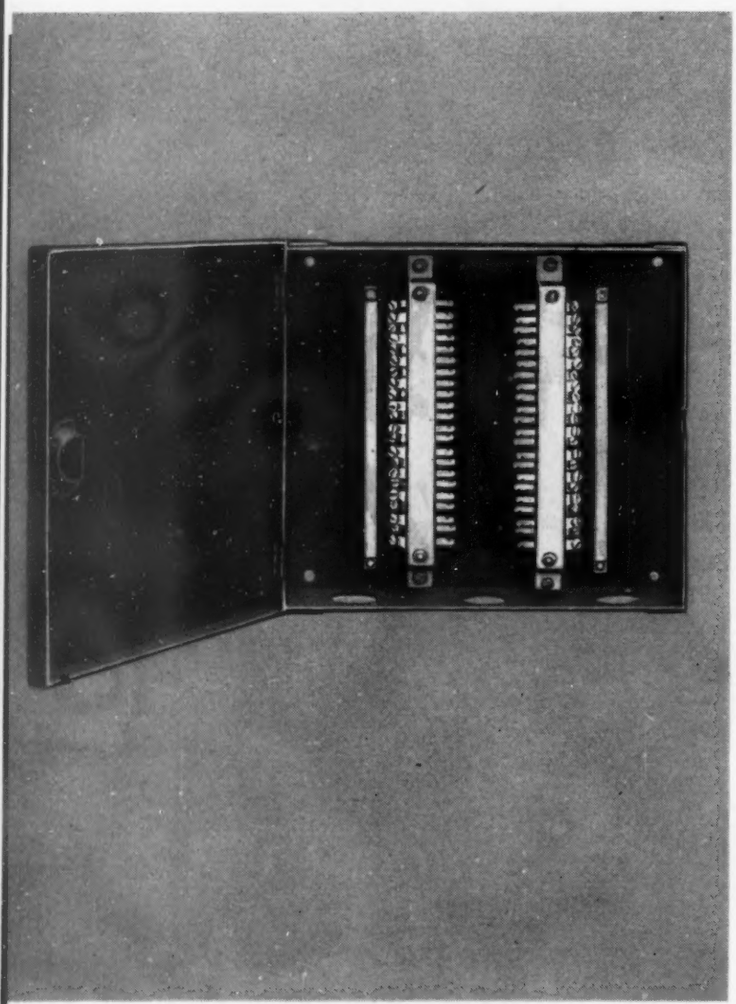
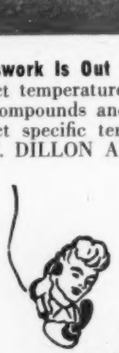




Guesswork Is Out when you use the Dillon Temperometer. It registers correct temperatures of cable damming and impregnation waxes, paraffin, compounds and wiping solder. These materials must be heated to correct specific temperatures to get best results. Thousands of these W. C. DILLON AND COMPANY, INC. instruments are in use today.



A Practical, Efficient Way of terminating and distributing lead covered cable is to use the Reliable Building Terminal Box. Made by RELIABLE ELECTRIC COMPANY, it's available in capacities from 11 to 104 pairs, with a choice of three different types of terminal strips with soldering or binding post terminals. Any of these styles can be furnished for wall or flush mounting.



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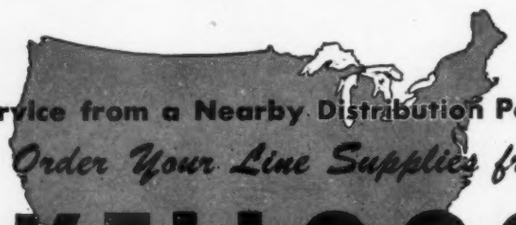

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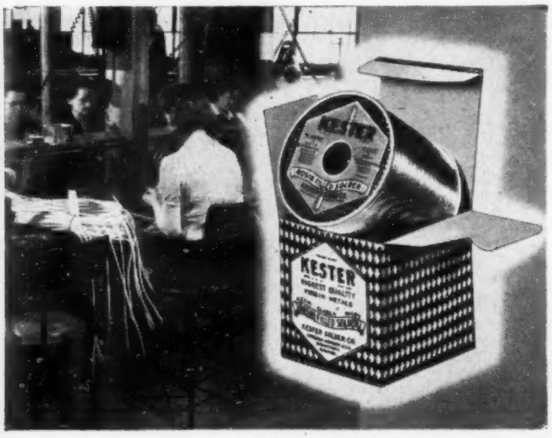
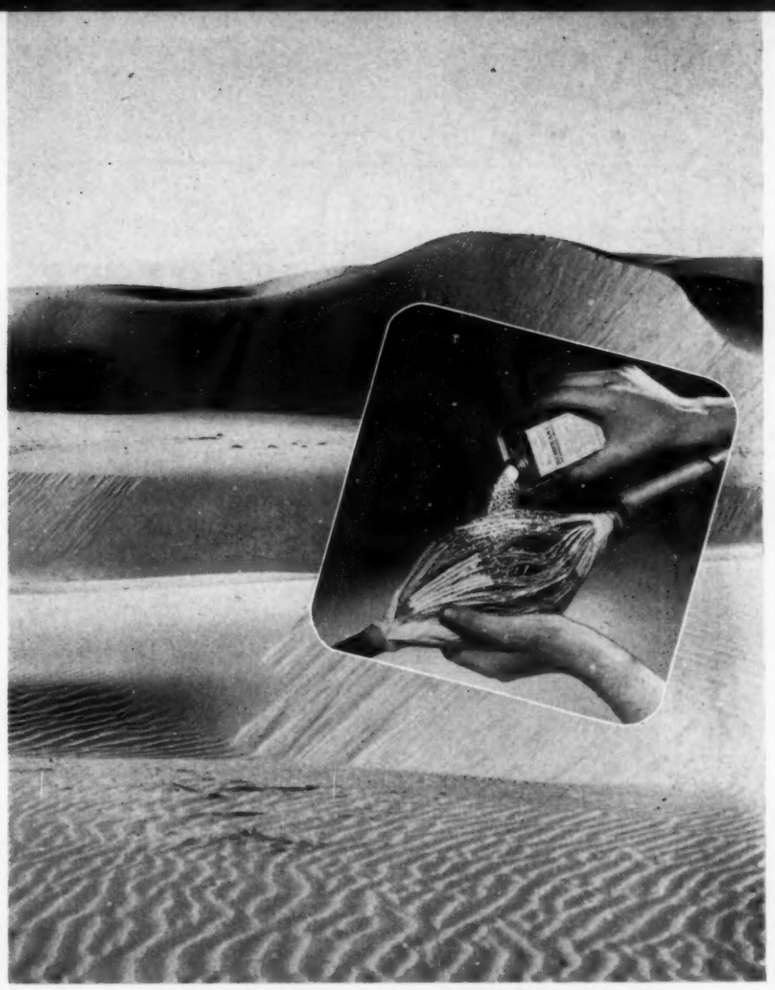
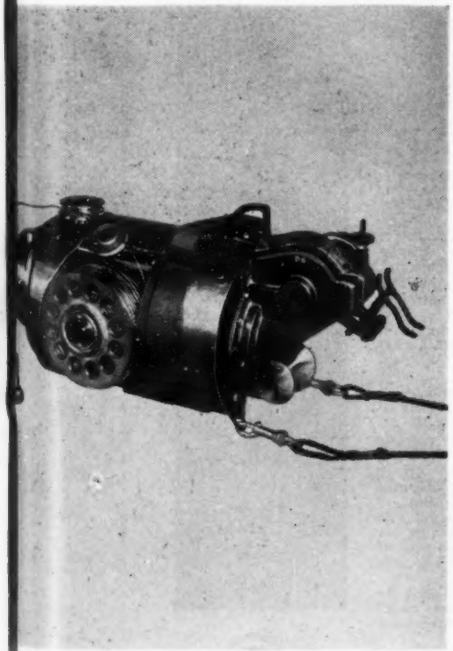


Sealed Against Trouble. Manufacturers of communication equipment insist on Kester Rosin-Core Solder for eliminating high-resistance joints and intermittent open-and-closed circuits. Remember to use KESTER SOLDER CO. Rosin-Core Solder throughout *your* telephone system.



Drier Than the Driest Desert! Drierite Desiccant is the safer way to dry out splices in lead covered cables. After splicing, just bind a cotton gauze under the splice and sprinkle Drierite granules among the conductors. This W. A. HAMMOND DRIERITE CO. product absorbs all moisture, thus making the splice about the driest part of the entire cable line. Use it to end moisture troubles.



Lower Costs on New Construction! The Model "D" Neale Spinner, made by CABLE SPINNING EQUIPMENT COMPANY, operates smoothly under all conditions. Ratchet locks it in position whenever pull on tow line is released, regardless of the machine's location on the strand.

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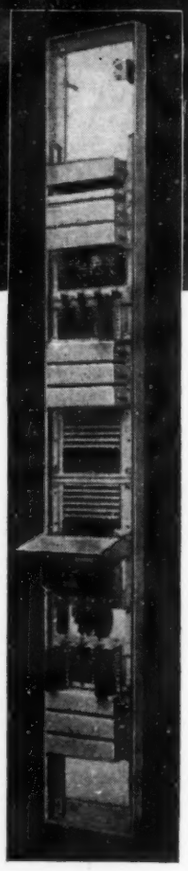
Reduce Post-War Operating Costs with PHILCO Floté Telephone Batteries. The experience of many telephone engineers proves that the famous Floté element eliminates low cells in full float service, lowers maintenance and charging costs, lengthens battery life. Ask for specification data.

LINK THE WORLD'S RESOURCES - - -



IN THE RESIDENTIAL TOWNS

Work is the first necessity; only by effort can life be sustained. Other necessities of life however are Shelter, Rest and Recreation. These are represented by the residential towns. Homes as dormitories; indoor and outdoor sports and recreational centres to provide essential relaxation and social intercourse.

As talk is the preliminary to enjoyment of the amenities of the residential town so telecommunications are indispensible to it being carried on with despatch, convenience and economy. It is in this respect that Strowger Telecommunications have proved acceptable to residential areas, as evidenced by the large number throughout the world equipped with Strowger Main and Satellite Automatic Exchanges.

WITH

STROWGER

TELECOMMUNICATIONS

AUTOMATIC TELEPHONE & ELECTRIC CO. LTD.

NORFOLK HOUSE, NORFOLK STREET, LONDON, W.C.2

TEMple Bar 9262

STROWGER WORKS, LIVERPOOL 7

STROWGER AUTOMATIC ROUTINER

- *It carries out automatically almost the whole of the routine tests usually required in Automatic Exchanges.*
- *It saves much time and labour and raises yet higher the standard of operational efficiency.*
- *It comprises standard Strowger Telephone apparatus mounted on a compact rack.*
- *It is permanently wired via switching components called "access equipment" to each circuit to be tested.*
- *It subjects each selector or circuit in turn to a series of thorough functional tests.*
- *It functions with extreme rapidity and is set in motion by the operation of a key.*
- *It indicates by audible and lamp signals if any item of equipment has become faulty or if any abnormal condition has arisen. It indicates the piece of apparatus affected and the nature of the defect.*
- *It is normally provided for group and final selectors on all except the smallest exchanges.*

A7071-B2

"Entrance Requirements"

Telephone companies are as exacting in their "entrance requirements" for switchboard equipment as are the best schools with candidates for admission. For over half a century, they have been well served by the accurate, simple-to-operate, durable Calculagraph; and that is why the Calculagraph continues to be the *standard* instrument for recording the starting and elapsed time of toll calls.

The appearance of the switchboard model Calculagraph is familiar to almost everyone connected with the telephone industry. On this page we show two models possibly less familiar. They are finding increasing popularity in other fields—for timing piece-work in manufacturing plants, for personnel time-cards in office and factory. We appreciate the heartiness of the telephone industry's endorsement of our product, which has made this expansion possible. We thank you for our "diploma!"

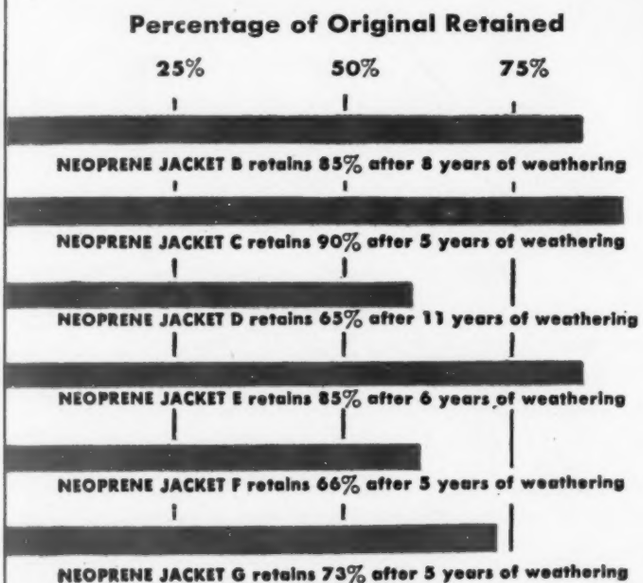
CALCULAGRAPH COMPANY

310 SUSSEX STREET • HARRISON, NEW JERSEY

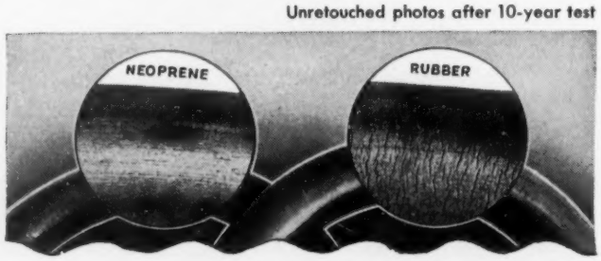
Field Tests Show Long Outdoor Life for Wire and Cable Jackets of

TOUGH, DURABLE NEOPRENE

How ELONGATION AT BREAK is retained after years of exposure to sunlight and weather...


Percentage of Original Retained
25%
50%
75%
NEOPRENE JACKET B retains 85% after 8 years of weathering
NEOPRENE JACKET C retains 90% after 5 years of weathering
NEOPRENE JACKET D retains 65% after 11 years of weathering
NEOPRENE JACKET E retains 85% after 6 years of weathering
NEOPRENE JACKET F retains 66% after 5 years of weathering
NEOPRENE JACKET G retains 73% after 5 years of weathering

Unretouched photos after 10-year test



Elongation at break is a characteristic which is closely observed when testing wire and cable jackets by exposure to sunlight and weather. Severe losses in this property are one sign of approaching disintegration of the jacket. The very fact that elongation at break can be measured for these neoprene jackets after years of exposure to sunlight and weather is in itself significant. It proves that there are no deep cracks in the jackets. By contrast, the rubber jacket shown above was so badly cracked after a few years exposure that no elongation tests could be made. Such cracks in cable jackets mean the easily damaged insulation beneath is exposed to sunlight, weather, rain, and ice.

Look to neoprene for longer life and better protection for wire insulation—in jackets and sheaths for drop wire, riser cables, power cables and many other types of wire and cable to be used outdoors.

Neoprene also gives excellent resistance to abrasion and wear, to acid fumes and smoke, to ozone and oxidation. Get the maximum return for your investment in years to come. Specify neoprene jackets and sheaths.

Here's Why Neoprene
DOES SO MANY JOBS SO WELL!

- ★ High tensile strength, resilience, low permanent distortion.
- ★ Tough and durable, resists abrasion and cutting.
- ★ Superior resistance to sunlight, aging, ozone, and heat.
- ★ Resistance to deterioration by oils, solvents, chemicals, acids.
- ★ Superior air-retention, low permeability to gases and fluids.
- ★ Special compositions are flame-retarding, static-conducting, flexible at low temperatures.

Write for *your free subscription to The Neoprene Notebook. Packed with information about new or unusual neoprene applications—which may give you valuable new ideas. Back issues on request. Rubber Chemicals Division M-9, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.*

For Better Equipment, Specify

DU PONT NEOPRENE

The* VERSATILE *Synthetic Rubber

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DU PONT
REG. U.S. PAT. OFF.

Compare the fast, easy *Nicopress* Line Splice with older methods . . . just do this

1 CLEAN ENDS OF WIRE

2 INSERT WIRE IN SLEEVE

3 COMPRESS WITH THE EASY TO HANDLE *Nicopress* TOOL

and you get this

The completed splice is stronger than the rated breaking strength of the wire itself.

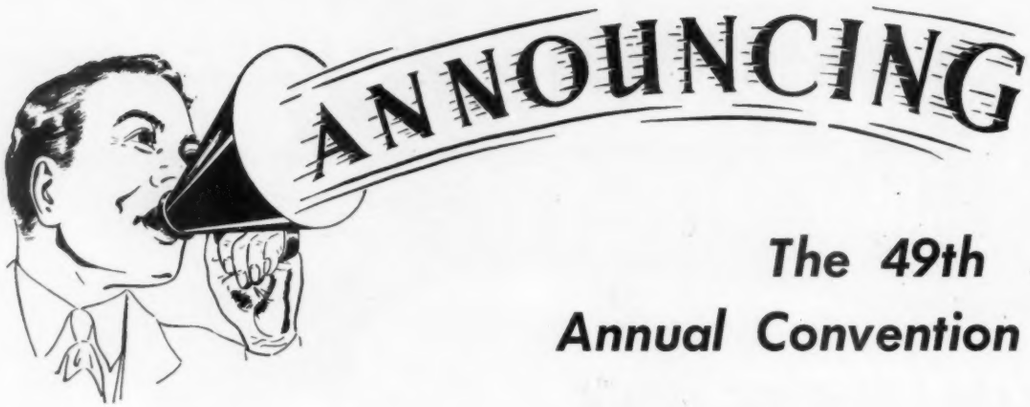
The National Telephone Supply Company

5100 SUPERIOR AVENUE • CLEVELAND 3, OHIO

Canadian Mfr.—N. SLATER CO., LTD., HAMILTON, ONT., CANADA

Export Distributor—INTERNATIONAL STANDARD ELECTRIC CORP., NEW YORK, N. Y.

THE NATIONAL TELEPHONE SUPPLY COMPANY



The 49th Annual Convention of the

United States Independent Telephone Association

Stevens Hotel -- Chicago -- October 14-15-16

To be Bigger and Better than ever before
It will also be one of the most important meetings the Association has ever held

All Independent Operating Telephone people are cordially invited to attend this convention, whether their companies are members of the Association or not. This is an Independent Industry convention and we expect every Independent to be present.

In the case of manufacturers and suppliers, attendance at the convention will be limited to those holding membership in the Association.

The Pioneer's Meeting, Banquet and Show . . . plus the following program features have been arranged for your pleasure.

"The Economic Problems Ahead," Address by Dr. Emerson P. Schmidt of the U. S. Chamber of Commerce.

Post War Telephone Service in the Independent Telephone Field.

The Future of Independent Telephony, With Special Reference to the Small Companies.

Progress Being Made in Meeting the Held Order Problem.

What the Manufacturers are Doing to Help Meet the Service Situation.

How Soon Can Needed Equipment be Obtained?

The Rural Telephone Bill.

How the Industry is Solving the Rural Telephone Problem.

The Importance of An Adequate Advertising Program.

The Minimum Wage Bill.

"Electronics—The Magic of War and Peace," Address by Mr. Gordon Volkenant of Minneapolis-Honeywell Regulator Company.

The Specter of Increased Wage Demands.

General Wage and Hour Problems.

Rising Operating Costs and Subscriber Rate Increases.

Developments in Radio Telephony.

Mechanics of Dial Conversion.

Use of Modern Tools and Testing Apparatus.

Small Central Office Buildings and Dial Package Units.

Current Traffic Problems and What is Being Done to Solve Them.

Tariff Filings for New Services.

Major Problems in the Realm of Accounting.

Lightning Protection.

Toll Compensation Relationships with the Bell System.

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION
Munsey Building, Washington, D. C.

A World-Wide Service

The products of Automatic Electric Company, and of the manufacturing companies affiliated with it, have earned a reputation for quality which extends far beyond the countries of their origin. From these organizations come telephone exchange equipment, telephone instruments, and telephone wires and cables which are sought by telephone operating companies and administrations in all parts of the world.

The International AUTOMATIC ELECTRIC Group meets this demand through a world-wide organization which is prepared to supply these products to telephone men anywhere.

We are affiliated, in our Group, with telephone companies operating in seventeen states in the United States, also in Canada and elsewhere. The International AUTOMATIC ELECTRIC Group thus has available the experience of these operating companies, and offers the necessary technical skill and operating experience for the engineering and installation of telephone plants of any size in any part of the world, and is prepared to finance such plants if and as desired by any customer. All inquiries will receive prompt attention.

International
AUTOMATIC ELECTRIC
Corporation

1033 West Van Buren Street, Chicago 7, U. S. A.

AUTOMATIC ELECTRIC SALES COMPANY, S. A.
22 Rue du Verger Antwerp, Belgium

Export Distributors For:
AUTOMATIC ELECTRIC COMPANY, Chicago, U. S. A.
PHILLIPS ELECTRICAL WORKS LIMITED, Brockville, Canada
AUTOMATIQUE ELECTRIQUE, S. A., Antwerp, Belgium
AUTELCO MEDITERRANEA, S. A. T. A. P., Milan, Italy
Selling Companies and Agents Throughout the World

Shown above is Chicago's famous Stevens Hotel, the largest hotel in the world, scene of the 1946 convention of the United States Independent Telephone Association.

At the right, Miss Anna Broderdorf, Chief Operator at the Stevens, is shown standing in front of the 20 position switchboard. Unseen, however, are the 3200 telephones and the 130 trunk lines which serve the 3000 rooms in the hotel.

OUR CONVENTION TELEPHONE DIRECTORY WILL BE PUBLISHED FOR YOUR CONVENIENCE

We are happy to announce that for the first time since 1941 we will provide Convention Telephone Directories for visitors to the National Convention of the United States Independent Telephone Association to be held at Chicago October 14, 15, and 16.

Two editions of the Directory will be published. Each will contain the names and hotel rooms of all registrants arriving by 6 P.M. of the preceding evening. Each edition will also contain a complete classified section listing the representatives of all manufacturers and suppliers registered at the convention.

A copy of each of these directories will be delivered directly to your downtown hotel room by 6 A. M. Tuesday and Wednesday mornings. We believe you will find them a great convenience in making both social and business contacts.

The idea of these Convention Directories was conceived in 1940 by General Telephone Directory Company as our exhibit at the Convention. The helpful cooperation of various organizations and individuals, including R. R. Donnelly & Sons who print the books, plus the "know how" of our own experienced organization, has made it possible to print such a complete roster so rapidly and so efficiently.

If you have in mind the modernization and improvement of your Telephone Directory publishing procedure, we should like very much to discuss the matter with you during the Convention. Also, we shall be glad to have you call at our new Chicago office, 185 N. Wabash Ave., at any time that you wish us to be of service.

GENERAL TELEPHONE DIRECTORY COMPANY

EASTERN OFFICE: BEN HUR BUILDING, CRAWFORDSVILLE, INDIANA, TELEPHONE 22

WESTERN OFFICE: PRESS-TELEGRAM BUILDING, LONG BEACH, CALIFORNIA, TELEPHONE 672-

EDITORIAL

The Right to Say It

IN THIS issue of TELEPHONE ENGINEER AND MANAGEMENT we inaugurate a new feature: A monthly two-page commentary on the telephone industry and matters affecting it, by Mr. Jay G. Mitchell.

This same feature will also appear, starting with the October 1st issue, in our sister publication, FORTNIGHTLY TELEPHONE ENGINEER.

Mr. Mitchell joined our editorial staff September 1st, as a full-time member. He needs no introduction to the telephone industry, of which he has been a part for many years. His contributions to the industry, technical and otherwise, by his writings and in other ways, have been substantial. His acquaintance in the telephone field is wide, and his knowledge of telephony, historically and otherwise, is broad.

Mr. Mitchell will express, in his column, his own views, opinions and philosophies, developed through years of contact with and experience in the telephone business. Very likely you won't agree with all that Mitchell says. Very likely we won't agree with all of it ourselves but, as to that, we go along with the teachings of the French philosopher, Voltaire, who held that he could not agree with many things other people said, but that he would defend to the limit their right to say them.

Mitchell's Commentary is part and parcel of our own philosophy as to the obligations of a trade publication to the industry it undertakes to serve.

We think that a trade publication falls short of its duty to its industry if, in an effort to keep all its readers pleased, it ignores issues of importance because they are controversial.

We think the best way to deal with such issues is to bring them out in the open and let all sides say their say about them.

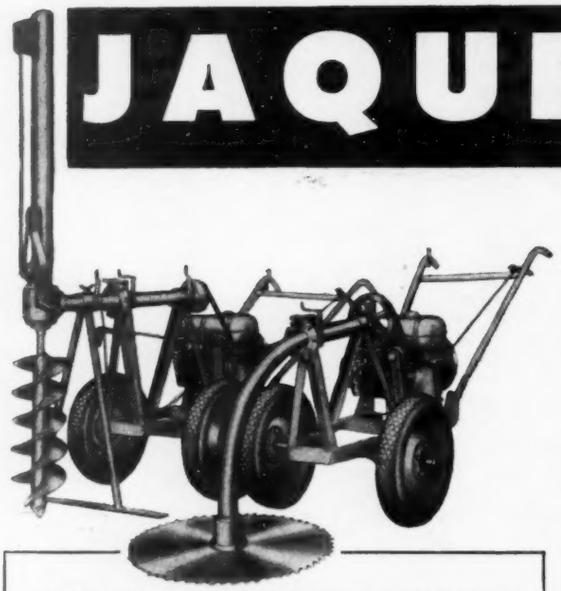
In keeping with that policy we have, during the past two years or so, had the privilege of publishing articles, written exclusively for us by many important men in the Independent telephone industry, on a considerable number of matters affecting the telephone industry. These articles frequently have been—and were intended to be—provocative of thought and discussion. That they have been that is evidenced by our own incoming mail from readers. (You'd be surprised at the number of readers who jump down our throat every month about something some writer has said in our publications.)

We might add that we do not always agree, ourselves, with the theories and philosophies expressed in articles published in this magazine. But here we go Voltaire one better—we not only defend the right of these writers to say what they think, but we also encourage them to say it. That, we believe, is one way of getting these issues up on the table for full and frank discussion and settlement.

It is for that same reason that we cover, in our editorials, a wide range of subjects of importance, we believe, to the Independent telephone industry. We try to deal with these subjects constructively, but we do not dodge issues because they are controversial.

Our aim is to make our publications constructive, helpful to the telephone industry and to all the people in it, informative and forward-looking. To that end we use our energy to the utmost to continuously improve these publications. We think you will find Mitchell's Commentary an interesting and constructive addition to these publications.

JAQUES LABOR SAVING MACHINES



Do the Job

QUICKER • BETTER

If it's a big job like constructing a telephone, power line, or drilling foundation holes, THE JAQUES HYDRAULICALLY CONTROLLED EARTH BORING MACHINE below will do the job faster, easier, and better—at a saving in time, manpower, and cost. Note some of its principal features:

1. ALL PLUMBING is hydraulically controlled, enabling faster operation and transportation from hole to hole as machine can be instantly lowered to traveling position, and again quickly placed in operating position regardless of the unevenness of the terrain.
2. FASTER DRILLING, as the hydraulic feed maintains a constant pressure on the bit maintaining the maximum R.P.M.'s on the auger without the slipping of any clutch or gears. The texture of soil controls the rate of digging.
3. HYDRAULIC PRESSURE on bit transmits less shock to machine while digging in rock or other hard-to-drill soils.
4. HYDRAULIC FINGERTIP CONTROL reduces operator fatigue to a minimum.
5. ONE MAN easily operates this machine as all controls are conveniently located.
6. PEAK OPERATING maintained hour after hour with these simple trouble-free hydraulic controls.
7. HOLES CAN EASILY be drilled at any angle.

ENGINE—Industrial Type Gasoline, approximately 30 h.p. S.A.E. Rating, with starter, generator, and battery. UNIT—mounted on steel-I-beam skids (Easily attached to or removed from truck or other conveyance). DRIVE—MECHANICAL—four forward speeds and one reverse. FEED—HYDRAULIC. LIFT—HYDRAULIC. LEVELING—HYDRAULIC. HOLE SIZE—Up to and including 24 inches. (Larger diameter on special order). DEPTH OF HOLE—8 to 9 feet with standard machine (greater depth on special order). WEIGHT—Approximately 3900 pounds. WIDTH—4 feet, 3 inches; LENGTH—10 feet

JAQUES JR. POST-HOLE DIGGER

HOLE DIGGING is easy, fast, economical and efficient with the JAQUES JUNIOR POST-HOLE DIGGER. In ordinary ground, it bores 9" hole three feet deep in sixty seconds or less. Can be operated by one man. Throws dirt out leaving hole clean. Complete, F.O.B., Denison . . .

$398.00

JAQUES JR. PORTABLE POWER SAW

It's easy to clear land of brush and trees, with a JAQUES JUNIOR PORTABLE POWER SAW. Its 30" unbreakable saw, powered by 5 to 6 h.p. engine zips through brush and trees in seconds, cutting them off level with ground. Once tree is felled, angle of saw can be changed quickly to trim and cut tree to any desired length. Price of saw, complete, F.O.B., Denison, is only . . .

$379.50

SAVE $200 ON COMBINATION

If you prefer, you can buy the SAW complete with frame and engine for $379.50 and the Post-Hole Digger attachment, which is interchangeable with saw, for $198.00 extra. Switch from Saw to Post-Hole Digger can be made in about five minutes.

TRACTOR MOUNTED SAW

For the bigger clearing jobs inquire about the JAQUES TRACTOR MOUNTED SAWS.

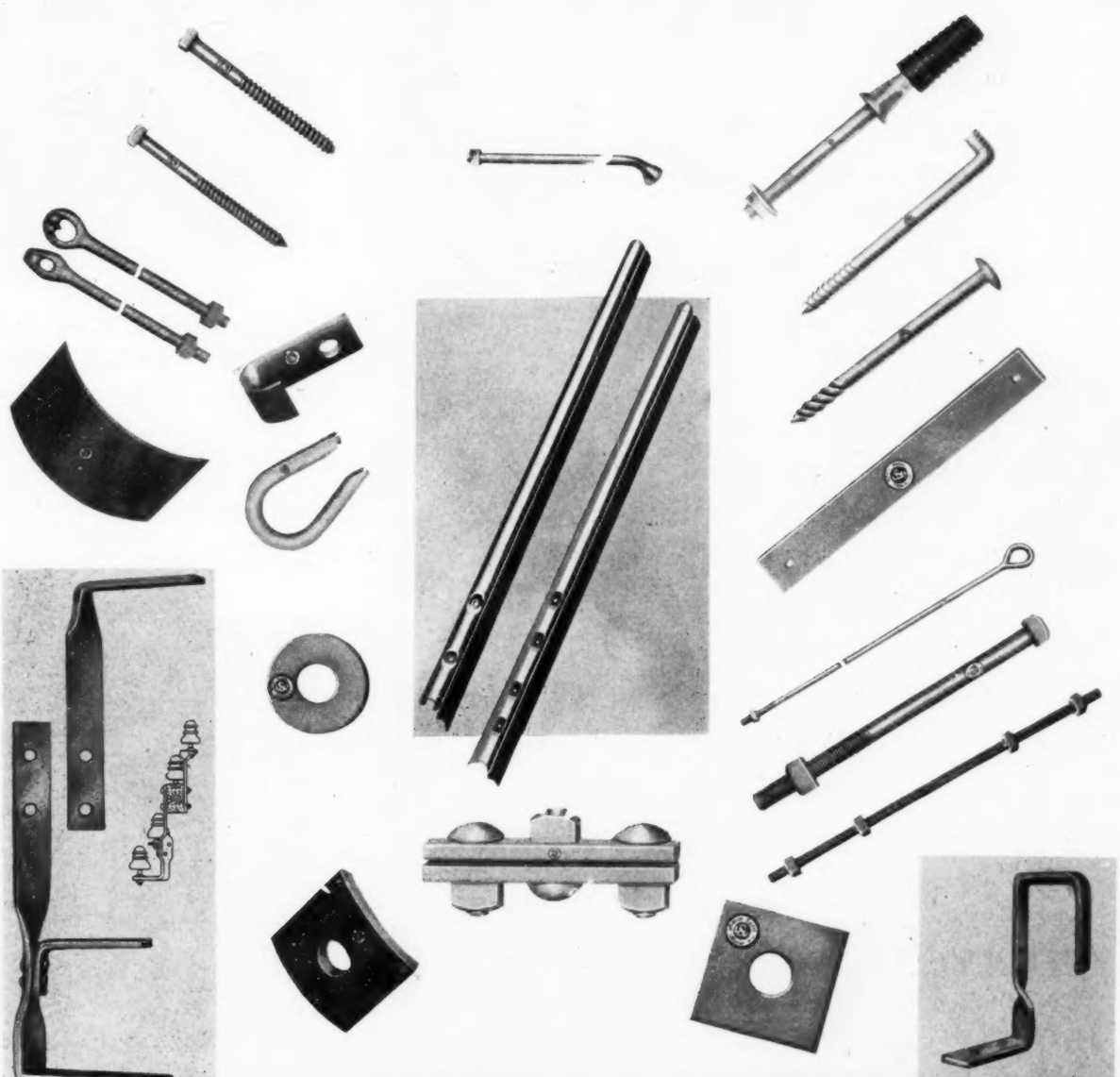
JAQUES POWER SAW CO.

Highway 75 Denison, Texas

MANUFACTURING AND SHIPPING DAILY

POLE LINE HARDWARE AND CONSTRUCTION SPECIALTIES

TRY OUR SERVICE



UTILITIES SERVICE CO.

ALLENTOWN, PENNA.

CARLSON SUPPLIES • STROMBERG-CARLSON S

• STROMBERG-CARLSON SUPPLIES • STROMBER CA

STROMBERG-CARLSON SUPPLIES • STROMBERG-CARLSON SUPPLIES

To Make Sure Of Higher Quality And Better Service . . . Concentrate Your Supply Purchases with STROMBERG-CARLSON

Buying construction materials and supplies from Stromberg-Carlson assures you of two important things:

First, high quality. Stromberg-Carlson will sell no supplies until the company is satisfied that both in quality and performance each item is up to the company's standards.

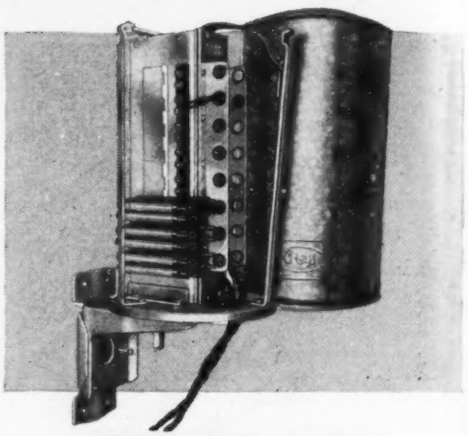
Second, better service. Stromberg-Carlson customers are supplied from stock depots located strategically from Coast-to-Coast. This insures faster deliveries.

While serious shortages of many materials still exist, Stromberg-Carlson, through a far-sighted buying policy, has been able to maintain a delivery schedule which has evoked the praises of hundreds of customers. As inventory conditions improve, Stromberg-Carlson will be a leader in giving its customers the resulting benefits.

So again we say, "To Make Sure of Higher Quality and Better Service, Concentrate Your Supply Purchases with Stromberg-Carlson!"

STROMBERG-CARLSON

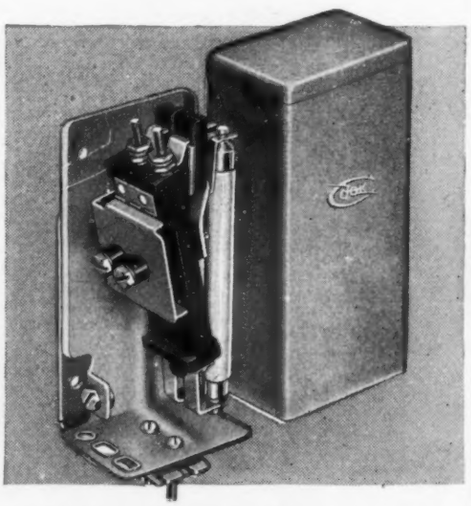
Factory, General Offices: Rochester 3, N. Y.
Branch Offices: Chicago 6, Kansas City 8, San Francisco 3
In Canada: Stromberg-Carlson Company Limited, Toronto



COOK TYPE S-20 POLE CABLE TERMINAL

Can be used as a protected or unprotected terminal. Made in 6, 11, 16 or 26 pair capacity.

Cook Type S-20 Pole Cable Terminals are engineered carefully to offer the user maximum economy, maximum convenience, maximum performance.



COOK TYPE RO OUTDOOR SUB-STATION PROTECTOR

A very rugged Protector assembled on a bracket of heavy steel instead of porcelain to take rough handling and subscriber abuse without danger of breakage.

TELEPHONES, SWITCHBOARDS AND INTERCOMMUNICATION SYSTE SOUND

STURGIS METAL CHAIRS

Distributed *Exclusively* By STROMBERG-CARLSON

LOW CHAIRS FOR OPERATORS *(left)*

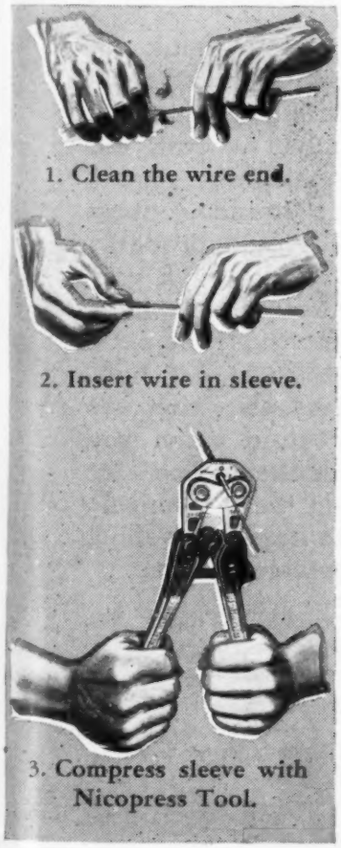
The No. 876-A has an adjustable seat height from 17 to 21 inches. The back support can be adjusted easily and quickly without tools or special keys. A choice of either genuine or imitation leather upholstery is offered. The seat is 15¼" x 16¾" with full saddle. The frame is of 1" tubular steel with all joints welded.

STANDARD CHAIRS FOR OPERATORS *(right)*

18-22 inches with footrest 5 inches from floor
20-24 inches with footrest 6 inches from floor
22-26 inches with footrest 8 inches from floor
24-28 inches with footrest 10 inches from floor
26-30 inches with footrest 12 inches from floor
28-32 inches with footrest 13 inches from floor

FASTER SPLICES WITH NICOPRESS SLEEVES

Nothing could be simpler than making a splice in a jiffy with Nicopress equipment. Here's all you do:



1. Clean the wire end.

2. Insert wire in sleeve.

3. Compress sleeve with Nicopress Tool.

The result is a splice that will hold up for the life of the wire.

LACING TWINE Invaluable for lacing wires into cables or lacing fanned-out ends. Put up in 1¼ lb. balls, waxed.

LONG LIFE TELEPHONE DRY CELLS

"EVEREADY"

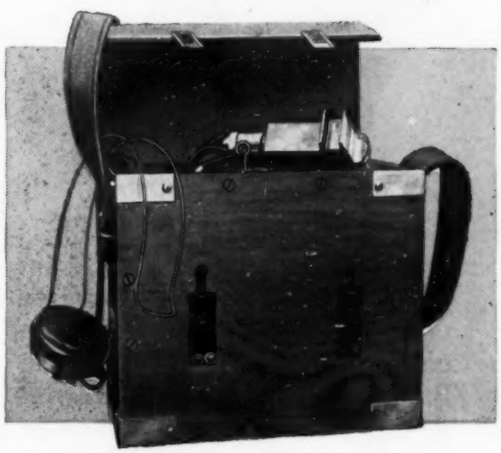
•

"COLUMBIA"

•

"GRAY LABEL"

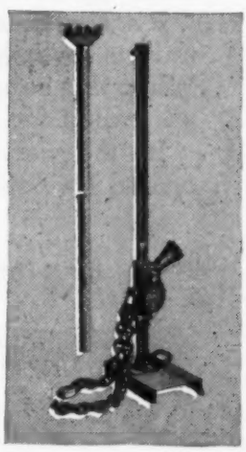
Give higher sustaining voltage, longer life. Made by the manufacturers of the famous "Eveready" "Air Cell" Operators' Transmitter Batteries.



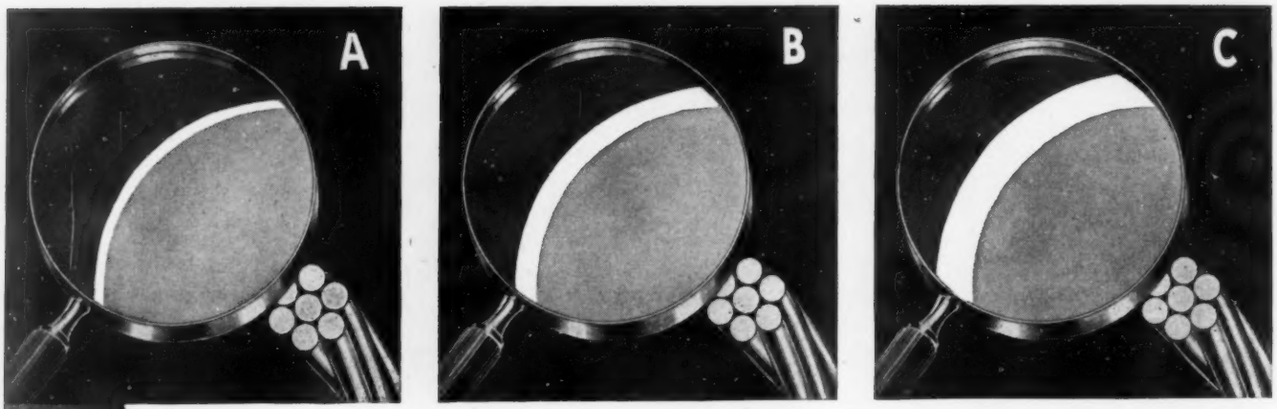
STEWART TEST SETS

Tests which way and how far the trouble is from you without opening the line. Complete telephone circuit for ringing and talking. Trouble is located with detector coil.

NO. 325 SIMPLEX 5-TON POLE PULLING AND STRAIGHTENING JACK



Designed for handling light-weight poles. Handy as a guy line tightener and for pulling underground cables. Single acting automatic raising and lowering.



A, B, OR C COATING . . . *Which?*

When analyzing his requirements, every purchaser of bethanized strand has three coating-weights from which to choose—A, B, and C. The B weight is twice as heavy as A; the C weight three times as heavy as A.

Before making his choice, the user naturally considers corrosive conditions in the area where the strand is to be used. He knows, of course, that the A coating is entirely suitable in many localities. But, when corrosive action is very severe, or where extra protection is required for other reasons, the heavier B or C coating-weight is generally specified.

It's something like war. Maybe a crack unit is overwhelmed by enemy numbers. When this happens, stronger defensive forces are called for.

In the case of bethanized strand, zinc-coated by Bethlehem's exclusive electrolytic process, you can bring up your reinforcements in advance. For average inland rural conditions, the A-weight coating will do a fine job for you at a remarkably low cost. But where excessive moisture, salt air, smoke, or acid fumes attack your strand—or get together to gang up on it—you'll probably need the heavier B or C. Under such conditions, B or C will prove the most economical in the long run, when you consider the extra protection afforded.

Whatever your requirements, you are assured of a long-lived coating when you buy your strand from Bethlehem. The zinc armor is of high purity, and the bethanizing process virtually eliminates flaking, peeling, and checking. Ask for complete details.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

BETHANIZED STRAND

NEWS BRIEFS

Improved Service for Mayview, Missouri

The Citizens Telephone Company, Higginsville, Missouri, has taken another step forward on its postwar plans with the construction of a new building to house the automatic dial equipment which will replace the present magneto switchboard at Mayview.

For several months preparations for this conversion have been underway. Cable facilities have been improved and increased and in the rural area, work has been started in clearing, extending, regrouping and metallicizing lines.

◆

Petition Company for Dial Installation

One hundred fifty business men and residents of Cosmos, Minnesota, recently petitioned the Hector (Minn.) Telephone Company for installation of dial telephone service. The village and community are now being served by multi-party lines.

◆

$300,000 Expansion Program For Minnesota Independent

The International Telephone Company, International Falls, Minnesota, has announced a $300,000 improvement program which has received the editorial commendation of the International Falls Daily. The paper stated: "Patrons of International Telephone Company received with pleasure this week, the news that the company is launching a $300,000 improvement program which will be second to none for a community of this size.

". . . . Their nerves and tempers often tested, subscribers have been asked throughout the war years to be patient with the switchboard girls and other employees because they were doing their best with limited plant facilities.

". . . . No one doubts the assertion of telephone officials that they have been doing their level best to obtain the additional facilities which the growth and development of the community require.

"Now we have concrete evidence that the company is proceeding to make good its promise that service would be improved as rapidly as conditions would permit. Once the proposed dial phones are installed along with plenty of lines for local and long distance calls, we will quickly forget the inconvenience we suffered during the last five frenzied years. So far as we know the service we received was no worse than that which other phone patrons in other small cities experienced. Tempers may have been strained but no one was hurt.

". . . . The expansion plans outlined appear to be of such nature that we will find ourselves well rewarded for the long wait. We compliment the management for going ahead with an extensive program which obviously is backed by great faith in the future of International Falls."

◆

L. G. Wilson Purchases Ghent, Kentucky, Company

The Ghent (Kentucky) Telephone Company owned and operated for 16 years by H. C. Bond, has been sold to L. G. Wilson, of Olive Hill, who took possession September 1.

◆

Harry Cline Passes Away

Harry J. Cline, 53, equipment supervisor of Citizens Independent Telephone Company, Terre Haute, Indiana, died July 30 at his residence in Terre Haute, following a heart attack.

Mr .Cline joined the Citizens Company in October of 1920. Prior to that time he was chief equipment installer with the Stromberg-Carlson Manufacturing Company, Rochester, N. Y. In July, 1936, he was promoted to chief switchboardman of the telephone company. He was named equipment supervisor in May, 1944.

He is survived by the wife, Lula E.; his mother, Mrs. Anna Cline, Batavia, N. Y.; one nephew and two nieces.

◆

Northwest Company Announces $110,000 Expansion Program

The Northwest Telephone Company, Tomah, Wisconsin, has announced a $110,000 expansion program that will enlarge and improve present facilities to take care of current and future demands. Present activity in the city is the placing of underground conduit and installation of new cables that should accommodate service demands for the next 10 years.

◆

CPA Approves Building For Carmi, Illinois

The Illinois Commercial Telephone Company has received approval from the Civilian Production Administration of its plans to erect a new telephone building in Carmi.

The building is part of the company's $283,000.00 program, which includes installation of a dial system.

◆

Cuban Telephone Company Plans Mobile Service

The Cuban Telephone Company is reported to have ordered equipment which it expects to have in operation before the end of 1946 to provide communication between automobiles and telephones throughout the island.

There will be two central stations, one at Havana and one at a location yet to be decided. The company is also planning to establish ship-to-shore radiotelephone service in the near future.

Mount it on a truck or tractor...

DIG 20-INCH HOLES, 10 FEET DEEP, IN 2 MINUTES!

HIGHWAY'S Model HD Earth Boring Machine mounts easily on 1½-ton truck or light tractor, requires only 6 square feet of platform space. Tractor mounting is preferred where a cross-country line must traverse rough or marshy ground. Takes only two minutes to dig a hole 6 to 20 inches in diameter, 7 to 10 feet deep, at any angle, in clay, hardpan, shale or frozen ground.

Highway's leveling mechanism quickly adjusts machine to dig straight down, regardless of position of tractor or truck. One train of gears rotates auger, another forces auger into ground or raises it. All gears and clutches are enclosed and operate in oil. 2,500-lb. winch and pole derrick can be furnished as optional equipment, mounted as integral part of the boring unit.

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HIGHWAY TRAILER COMPANY

Manufacturers of Utility Bodies · Winches · Earth Boring Machines · Pole and Cable Reel Trailers and other Public Utility Equipment.

EDGERTON, WISCONSIN, U.S.A.

MODERN STATION INSTALLATION

By J. S. REED

EXPERIENCE has shown that standard procedures in handling routine work greatly improve the workers' efficiency and decrease operating costs in any kind of business. This is also true of the telephone business, especially that part related to plant installation and maintenance.

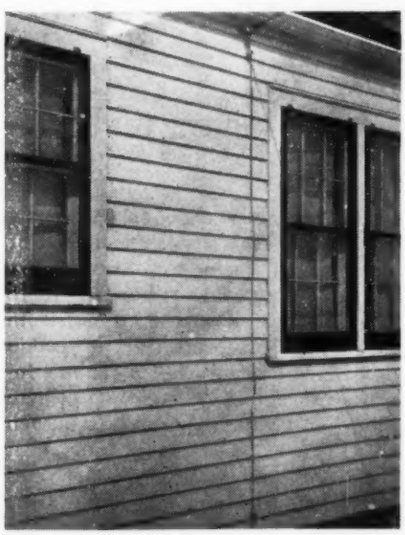


Fig. 1—Showing short direct run of drop wire to entrance hole in foundation sill.

Now that telephone equipment is gradually being made available in quantities to operating companies, it is a good time for these organizations to review present methods of installing station equipment, and see wherein improvements in technique and use of equipment can be made.

The modernizing of standard practices is no less important than the replacing of obsolete telephone equipment with up-to-date apparatus. Where company officials are alert to new and improved methods, the employees will usually respond by showing decided improvement in efficiency and skill in handling their work. This in turn creates a favorable impression on subscribers.

This article discusses methods of installing subscribers equipment, starting with the entrance of the service lead into the building, going through the process of placing the station protector and laying the inside wiring, and ending with the installation of the telephone instrument itself.

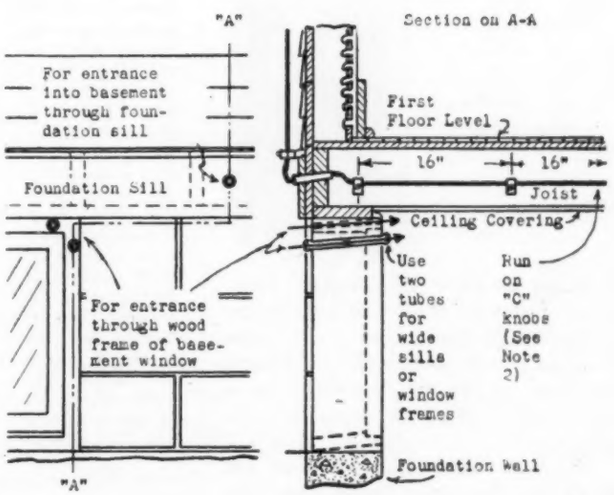


Fig. 2 — Method of bringing drop wire into building. Notes: (1). If no other location for the entrance hole can be found it is permissible to drill through the foundation wall as a last resort. (Enter through mortar joint.) (2). When protector is located some distance away, run wire on "C" knobs to protector.

Bringing the Drop Wire Into the Building

The exact location of a drop wire entrance into the building usually is a matter of judgment on the part of the installer. The following points, however, will be found helpful:

(1) Locate the entrance hole so that the drop wire run will be made in a direct vertical line from the primary attachment of the wire on the building to the entrance as shown in Fig. 1. A preferable location is on the rear of the building or, alternatively, on a side but never

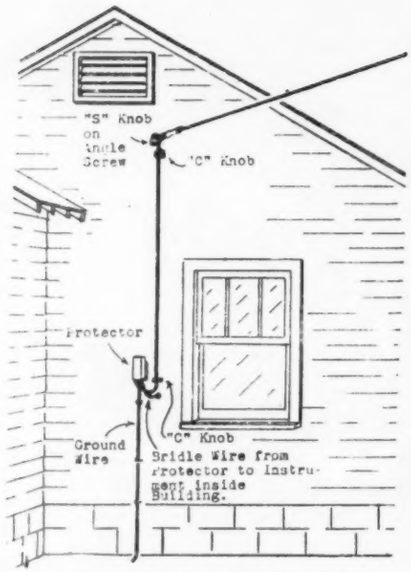


Fig. 5—Typical location of outside protector.

on the front of the building; unless it is impossible to attach the drop elsewhere on the structure.

(2) Make the wire run from the entrance to the protector inside the

Fig. 3 — Inside type protector.

building as short as possible. However, if it is a choice of having the station protector in an undesirable location, it is preferable to extend the run inside the basement to a more satisfactory location of the protector.

Fig. 2 illustrates methods of bringing the drop wire into the building. In certain cases fire stops may be found obstructing the foundation sill space. It is then advisable to bring the wire through a basement window frame to avoid tedious drilling through the firestop, or else through an intersection of mortar joints in the foundation wall.

In brick or stone buildings it is preferable to enter through the frame of a basement window. If this frame is of metal, a hole may be drilled through the foundation wall as a last resort.

In brick or stone veneer buildings, bring the drop wire through the foundation sill in all cases where practicable. Drill a ¾-inch hole through an intersection of mortar joints between bricks or stone blocks in line with the foundation sill. Clean out the hole and bore through the wood sill with a ⅝-inch auger bit. Bush the hole from both ends with porcelain tubes. (Care should be taken in locating the position of the entrance hole not to bore into the floor above the basement level.)

In locations where substation protectors are required, bush the entrance hole into a frame or masonry veneer house with a 5/16"x3" porcelain tube to keep the wire from coming into contact with the wood. In the case of wide frames or foundation sills, two porcelain tubes may be inserted from each end as shown in Fig. 6.

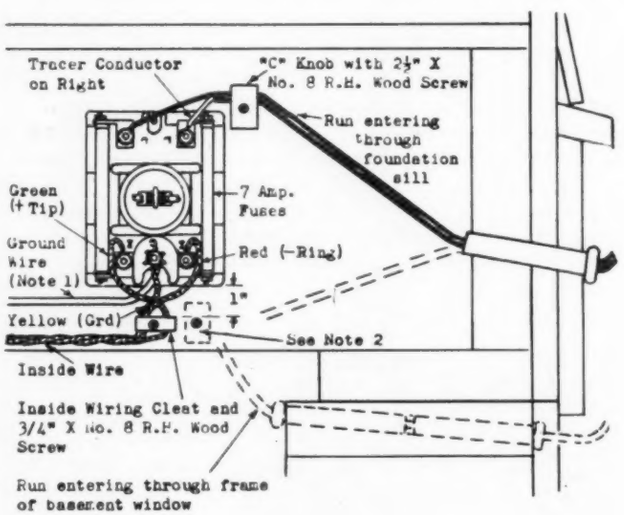

Tracer Conductor on Right
"C" Knob with 2½" X No. 8 R.H. Wood Screw
Run entering through foundation sill
Green (+ Tip)
7 Amp. Fuses
Ground Wire (Note 1)
Red (– Ring)
1"
Yellow (Grd)
See Note 2
Inside Wire
Inside Wiring Cleat and 3/4" X No. 8 R.H. Wood Screw
Run entering through frame of basement window

Fig. 6—Showing inside protector mounted on side of floor joist. Notes: (1). Make gradual bend in ground wire to minimize chance of lightning breakdown at this point. (2). Dotted lines show suggested alternative position of "C" knob if it is more convenient to reverse position of protector and connect line at bottom of protector. If joist is too narrow, "C" knob may be attached at side of protector.

The porcelain tube is not necessary where an outside protector is installed unless the wood at this point is damp or rotten. However, it is advisable to tape the drop wire where it goes through the entrance hole so as to plug the hole.

It is not necessary to form the so-called drip loop in the wire at the entrance hole if the hole is bored at a slight upward angle as shown in Fig. 2. If the porcelain tube fits loosely in the hole, several thicknesses of friction tape wrapped around the neck of the tube will hold it in place nicely.

The wire run inside the building should be made on "C" knobs or insulated screw eyes as shown in Fig. 2. The close spacing of the knobs is necessary to prevent contact of the wire with wood or electrical conducting surfaces as required by Fire Underwriters' rules. Where this contact cannot be avoided, the wire should be encased in loom or other approved insulation. At corners attach the wire to knobs mounted close to each side of the corner. Curve the wire to avoid contact with outside corners.

Mounting and Wiring Station Protectors

Station protectors installed at subscribers' stations are of two general types, namely, outside and inside as illustrated in Figures 3 and 4.

The outside protector is recommended for installations at: (1) Farm residences; (2) buildings where the basement is extremely damp or otherwise unsuited for locating an inside protector; (3) two story apartment houses where it is not possible to run wiring from an inside protector to a second story location for the telephone instrument, and (4) buildings where a dangerous fire hazard exists, such as explosive gas, vapor, or dust filled atmosphere. Fig. 5 illustrates a typical location of an outside protector.

The inside type protector is recommended for location in basements, especially where a multiple installation of protectors is to be made as in small apartment buildings where the number of entering lines does not justify the placing of an aerial cable entrance with building terminal.

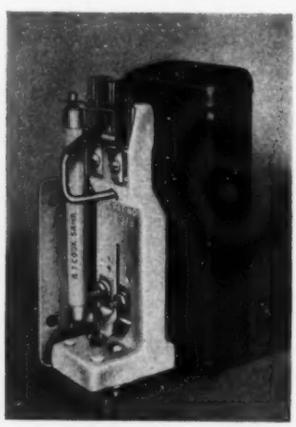


Fig. 4—Outside type protector.

It is recommended that the following instructions be observed in mounting inside protectors:

(1) The protectors should be located where natural lighting is available as from a basement window and where it will be readily accessible to trouble men or installers. There should be a clear space around and under the protector free from stored material or rubbish. For this reason locations in storage rooms or coal bins shuld be avoided.

(2) Locations for the protector in damp or dusty places such as over laundry sinks or ash containers are undesirable. For the same reason, protectors should not be mounted under water pipes unless the pipes are insulated to prevent sweating in warm weather.

(3) Protectors should be kept at least one foot away from electric, gas, or water meters, electric wires or conduit, or water or gas pipes for safety reasons and to avoid interfering with other utilities.

(4) Good locations for the protector are on the wall near the ceiling, on one of the floor joists, or directly on the ceiling if the basement ceiling is covered. These locations are illustrated in Figures 6 and 7.

Fig. 8 illustrates the method of mounting and wiring an outside protector.

When installing inside type protectors be sure not to mount the protector on its side as this position may cause carbon dust to bridge across the gap between the protector blocks and ground the line. If the protector is to be mounted on rough or damp walls, or on a covered ceiling, use a back board with the proper fasteners for the kind of mounting surface, i.e. wood screws in lead screw anchors in concrete block or brick walls and toggle bolts in hollow tile walls.

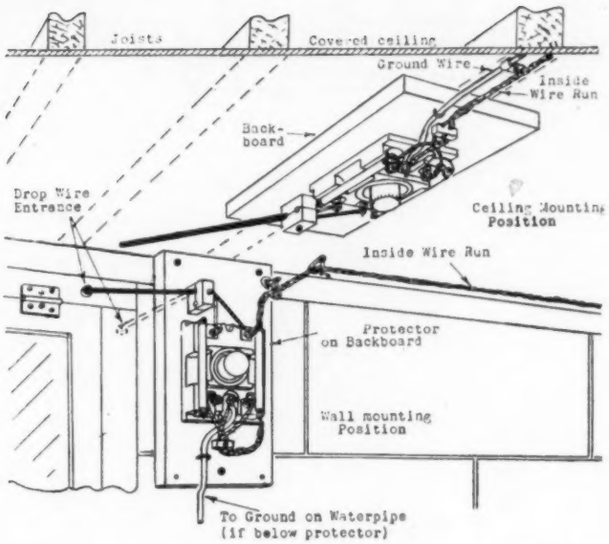


Fig. 7 — Method of mounting inside protector on foundation wall or on covered ceiling.

Ground Connections

A ground connection is required when a protector is installed to provide a path to ground for static or lightning discharges and for ringing current to return to earth in divided ringing systems.

Two methods of making the ground connection are in general use, one using a water supply system for the ground return and the other a metal rod driven into moist soil. Ground connections should not be made to a gas pipe, electrical conduit, or a sprinkler system.

Best results are obtained by connecting to a cold water pipe from a public water system. Private water systems should have a sufficient amount of pipe buried in moist earth to provide a low resistance path. Such systems may have a rubber hose connection to the pump and since water is a poor conductor, it is advisable to make the ground connection to the outside pipe from the well to the pump, if there is a sufficient length buried in moist soil, or to a metal well casing. In case of doubt, it is good judgment to install a ground rod.

A ground rod connection should be employed where an outside protector is installed rather than run the ground wire into the house for connection to a water pipe.

No. 14 braid and rubber covered single wire is commonly utilized for the run from the protector to its ground connection. It is generally desirable to run the wire in as direct a line as possible with the turns in the run no sharper than a 90 degree angle and to curve all bends. To avoid possible damage to the wire it is desirable to run the wire directly along a joist or girder rather than span it from joist to joist unless it can be kept close to a wall. The ground wire may be run together part way with the inside wire from the protector to the telephone instrument, but each wire should be attached to the supporting surface with separate fasteners.

Small poultry wire staples are quite satisfactory for fastening the ground wire to wood surfaces. For other surfaces, small ground clamps with suitable fasteners are required.

Fig. 9 illustrates a popular method of connecting ground wire to a water pipe. It is necessary to first clean the pipe thoroughly by means of emery cloth or sand paper to remove dirt and tarnish. Paint or

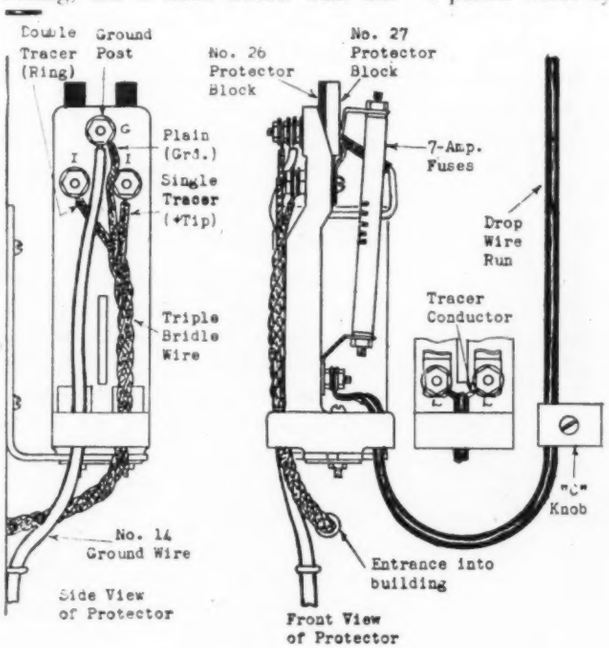


Fig. 8—Mounting and Wiring outside protector.

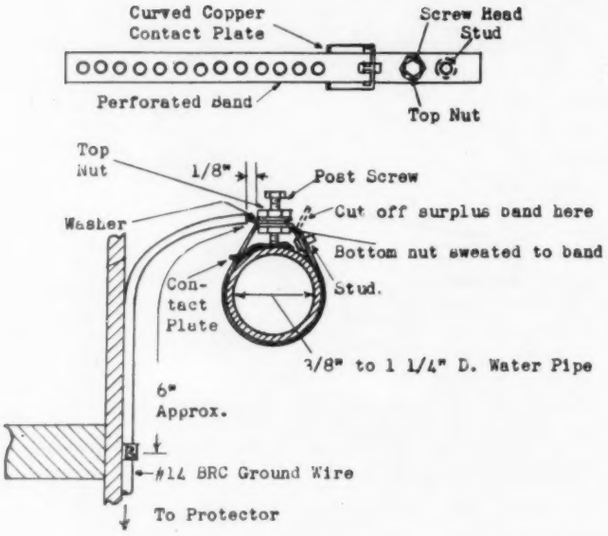


Fig. 9 — Showing method of installing ground clamp and connecting ground wire.

rust can be easily removed by scraping with a file or screw driver blade.

Ground rods are installed as illustrated in Fig. 10. A good method of driving the rod into the earth is to pour a little water into the trench and push the rod into the puddled soil. Rotate the rod in small circles as it is pushed into the ground to let the water run down the hole thus made. When it sticks, withdraw it slightly and pour in more water. Repeat the driving process until the rod is three inches or more below the level of the ground. In the case of larger and heavier ground rods, it is usually necessary to use a striking hammer or maul to drive the rod.

In freezing weather a frost bar is required to dig the trench. A ½-inch or larger rod is then used to break through the frozen earth before driving the ground rod in the regular manner.

The ground rod should be installed in moist earth in order to obtain a low resistance path. Where rock or hardpan is encountered below the surface drive the rod into the soil at an angle so as to bury the rod completely. Do not leave the top of the rod protruding through the soil.

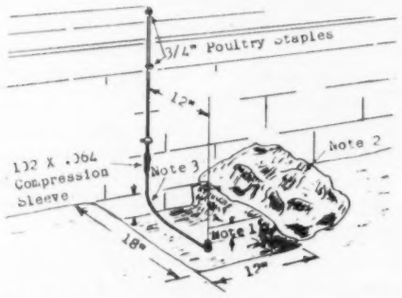


Fig. 10—Method of installing station ground rod. Notes: 1. Not less than 3" from top of trench. 2. Replace dirt in trench after installing ground rod. 3. Make gradual bend in tail of ground rod.

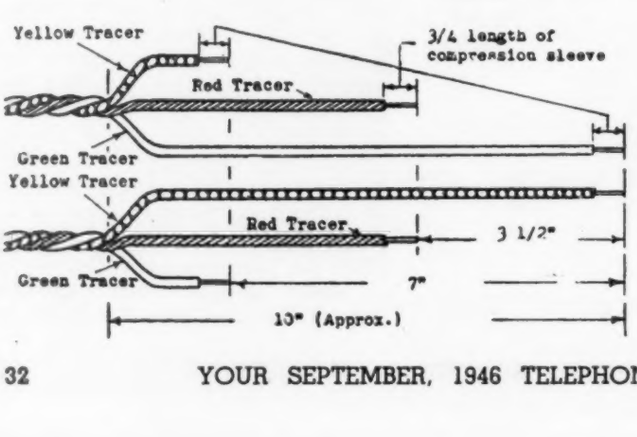


Fig. 11—Method of staggering splices on triplex inside wire.

Data on Station Wiring

No. 19 or No. 22 gauge duplex or triplex wire is commonly used for connecting the telephone instrument to the station protector. The most common color is brown or olive green, though ivory color is available when it is desired to run the wire on light colored surfaces. Inside wiring cable is also available in several sizes ranging from four pairs up and will be found quite suitable for locations such as in business offices where it would be undesirable to run a large number of wires exposed to view of the office occupants. In general, inside wiring cable should be placed if more than three inside wires would have to be used in an installation.

If an inside wire run is to be made in a damp location, it is advisable to reroute the wire run to avoid this place, or else to use bridle wire for at least a portion of the run. Connecting blocks are better for joining the inside wire and the bridle wire than splicing the two kinds of wire together.

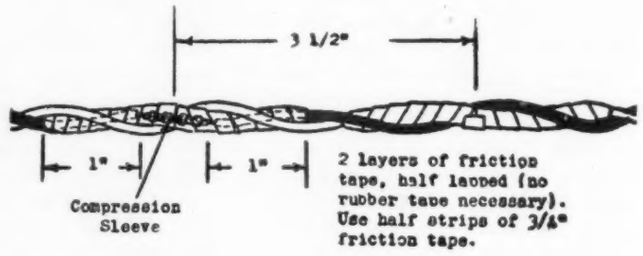

3 1/2"
1"
1"
Compression Sleeve
2 layers of friction tape, half lapped (no rubber tape necessary). Use half strips of 3/4" friction tape.

Fig. 12—Appearance of duplex inside wire after splicing.

As a rule, it is good judgment to reuse inside wire in a re-installation of the telephone instrument if this wire is in reasonably good condition. This is especially the case where the inside wire has been painted or papered over so that pulling the wire off would ruin the appearance of the surface covered by the run.

Splicing Inside Wire

In splicing inside wire, stagger the splices approximately 3½ inches as shown in Fig. 11 and use small compression sleeves. Tape the splices with friction tape as illustrated in Fig. 12. Rubber tape is not needed except when bridle wire is being spliced.

(J. S. Reed's interesting article on "MODERN STATION INSTALLATION" will be concluded in the October TELEPHONE ENGINEER AND MANAGEMENT.)

"The employee body is requested to bring any complaint or grievance of any nature whatever, that has not been satisfied through regular channels, to the attention of any employee member of the Junior Board and his case will, in turn, be presented to the Joint Board if such action seems to be justified by the Junior Board."

Marching along Together . . .

by OTTO WETTSTEIN, JR.
Chairman of Board,
Florida Telephone Corporation

NINE rank-and-file employees control the management of the Florida Telephone Corporation. With eight operating officials they constitute the Joint Management Board which determines all management policies. Employee members are elected by the employee body and official members are elected by the board of directors. The board of directors has delegated the determination of all practices and policies to this Joint Management Board.

When this form of management was proposed to the board of directors, some directors thought to give employees control over pay roll was going too far, so the veto power was retained. This appears to have been an unnecessary precaution as, after five years of operation under the plan, there has been no occasion for veto. The board of directors has approved of all the Joint Management Board has done.

Under this plan, management is divided into two boards, the Senior (Official) Board and the Junior (Employee) Board. Four employee members of the Junior Board are eliminated from membership at the annual meeting, by secret ballot of the board: usually those eliminated are the four who have contributed the least to the board's activities. The five hold-over members then nominate two new members for each vacancy and the one receiving the highest number of votes by the employee body represents his or her department for the ensuing year. By this method of rotation, company policies and problems gradually become impregnated throughout the employee body and the best managerial ability is discovered, developed and utilized.

It has been observed that when the responsibility of management is placed upon members of the Junior Board they act, on an average, as intelligently and are as loyal to the best interests of the company as members of the Senior Board.

On the third Thursday of each month, these boards meet in the

Otto Wettstein Jr. in 1896, at 21 years of age, installed one of the first Independent exchanges in Illinois at Rochelle. After operating this exchange two years he sold to a local company and moved to La Porte City, Iowa, from which headquarters he promoted and installed thirty exchanges in Iowa and Nebraska, most of them in competition with the Bell System. In 1912 he sold these properties and moved to Florida where there was no competition, and in the next 13 years constructed and acquired the 27 exchanges which, with connecting toll circuits, now constitute the system of the Florida Telephone Corporation.

In 1941, at the age of 66, he retired from active management in favor of his sons, Otto III, President and Max E., Executive Vice President. Otto III has charge of Plant and Traffic and Max, Commercial and Finance. Otto Wettstein Jr. is Chairman of the Board of Directors. At the time of his retirement, with the hearty approval of his sons, the employer-employee form of management described in the following article, which we requested Mr. Wettstein to write, was inaugurated.—Editor.

general offices at Leesburg, separately from 10 A.M. to 1 P.M. and, after having dinner together, jointly from 2 P.M. to 5 P.M. At the separate meetings in the morning neither board has any power of action except on selection of matters to be brought before the Joint Board in the afternoon for discussion and decision. In the Joint Board meetings every member has an equal voice and vote, and a majority vote determines all decisions.

It is the responsibility of executive officers to carry out practices and policies adopted by the Joint Board. However, in order to maintain authority and discipline, the executives have the power of hire and fire of those working under them without interference of the Management Board, even though such subordinate might be a member of the Management Board.

In Joint Board meetings it is made clear to employee members, by the presiding officer—the President or Executive Vice President, that while in the service they work under the supervision of one of the officer members of the board, as a member of the Joint Board, they are entirely independent and free from any authority whatever, and they are expected to act without fear or favor. It is also made clear to official members that any resentment by them of an independent attitude on the part of a subordinate while in a Management Board meeting will be held against such official.

The employee body is requested to bring any complaint or grievance of any nature whatever, that has not been satisfied through regular channels, to the attention of any employee member of the Junior Board and his case will, in turn, be presented to the Joint Board if such action seems to be justified by the Junior Board.

Responsibilities of The Junior Board

It is the duty of members of the Junior Board to keep in touch with as many of the employees as possible within their respective districts and departments with the objective of: (1) Becoming more familiar with working conditions; (2) To see what more can be done to help employees; (3) How to obtain more efficiency in the job; (4) How to improve the service, and (5) How to improve the company's employee and public relations.

The Junior Board is regulated by its own by-laws which cover: (1) Date of annual and monthly meetings; (2) Method of election and elimination of members; (3) Method of election of group officers; (4) Duties of officers; (5) Appointment of committees; (6) Duties of members; (7) Action relating to absentees and vacancies; (8) Fees for meeting attendance; (9) Restriction of action; (10) Participation in Joint Management Board; (11) Order of business, and (12) Amendments to by-laws.

Action of Junior Board consists of discussion of any matters pertaining to the business and decisions as to matters to be brought before the Joint Board. If desired, recommendation for action may be made to the Joint Board. If sufficient information on any subject is not available for decision, a committee is appointed to investigate and report at the next meeting.

Members of the Junior Board, upon acceptance of office, sign the following pledge:

"In accepting the office of membership on the Junior Management Board of the Florida Telephone Corporation, I hereby pledge that I will perform the duties of that office to the best of my ability.

"That I will not make any decision on any matter under discussion without first obtaining as much information on the subject under discussion as I believe is needed to make an intelligent decision.

"That in making such decision I will place emphasis upon, and hold most important, the interest of the entire organization — the employee body as a whole, the stockholders and the public we serve.

"That I will strive in every conceivable way to promote the business and that I will assist the officers, directors, and employees to the best of my ability.

"This obligation is assumed freely and voluntarily without reservation or equivocation."

Cooperation of Boards Is Unanimous

Members of the Senior Board, upon acceptance of office, make the same pledge as the Junior Board members, and activities of the Senior Board have the same restrictions as those of the Junior Board.

There has never been an attempt by members of the Junior Board to "gang-up" in opposition to the Senior Board members in making decisions and it has happened frequently that proposals by the Junior Board have had the unanimous support of members of the Senior Board.

One visiting employee from each department is invited by the Junior Board to attend the monthly meetings of both the Junior and Joint Boards. These visitors are invited to

enter into all discussions but are not permitted to vote. The purpose of this is to give knowledge of company affairs to a larger number of employees and to help prepare them for possible election to board membership.

One of the strongest of man's instincts is his urge to win distinction, and every individual possesses a certain amount of ego. Election of an employee, who has had little expectation of becoming associated with the executive officers, to an office where he has a voice and vote equal to the highest official, appeals to his ego and gives him a prestige with the employee body which he did not have before. This is indicated when, in some cases, candidates for Junior Board membership have campaigned for votes to be elected to the Board.

Guiding Points of Joint Board

Fundamental management policies of the Joint Board have been: (1) Sound financial structure; (2) Adequate rates and net earnings; (3) Efficient service to customers; (4) Satisfactory employee relations; (5) Good public relations, and (6) New business development. The Joint Board's guiding policies for the future are:

(1) We will continue to improve and modernize our plant and equipment so that the best of mechanical operation may be performed.

(2) We will continue to impress our employee body with the importance and necessity of rendering to our customers the best, the most helpful and friendly service, so we will enjoy the good will of those we serve.

(3) We will continue to do our full part and share in all civic and charitable movements so that our good citizenship will be recognized in the communities in which we operate.

(4) We will continue to make the guiding principles in our employee relations, that of making employment in this organization satisfactory to every worker.

(5) We will continue to keep faith with our customers and with our employees, and make no commitments that there may be doubt about fulfillment, but having made them, we will keep them faithfully.

(6) We will continue to keep our budget in balance and our expenses within the proper ratio to revenues so that our high credit rating may be maintained, and at the same time pay our employees adequate wages and our stockholders fair dividends.

Otto Wettstein, III

Employees Receive Many Benefits

Besides benefits from a voice in management, employees of the Florida Telephone Corporation have other benefits, all of which are seldom found in either industrial or public service organizations. One of these is complete insurance coverage all paid for by the company, including life and accident insurance in the amount of $1000 to $3000, depending upon wages, disability insurance $7.00 to $28 per week; hospitalization $5.00 to $6.00 per day with surgical and obstetrics fees; and hospitalization insurance for dependents of employees with the same benefits as employees.

The company also has a profit sharing plan under which 10% of the profits are contributed to an employee savings and retirement fund and to which the employee contributes 5% of his wages. If he quits before the age of retirement (65) he is paid all of his own contribution and a graduated percentage (25% to 75%) of the company's contribution, depending on term of employment, plus his share of the fund's earnings. Augmented by the Federal Social Security pension, the fund will provide adequate support after retirement. The title to the fund is in a bank trustee.

It has been the policy of the Management Board to give employees the benefit of all earnings over and above requirements to meet reasonable dividends and adequate surplus. Besides vacations and holidays with pay and a liberal Christmas bonus each year, a bonus of the company's stock amounting to $20,000 was paid to employees in 1941, in 1942 a cash bonus of $10,000 and in 1943 a cash bonus of 10% of annual wages amounting to $18,000. These bonuses have been paid while regular wages have been in line with other companies in the same class.

All of these benefits to employees have been provided without sacrifice of adequate net earnings. The company's cash position and credit have been improving from year to year. Before this plan of management was adapted the company's 6% bonds were sold at a discount. Now its 3¼% bonds have been sold at par and satisfactory dividends (4%) have been paid to stockholders with substantial balance to surplus each year. Accumulated surplus now amounts to 50% of the capital stock.

The management is proud of the fact that the War Manpower Commission reported, after its investigation, that the company had one of the most comprehensive and complete employee programs that it had seen.

Management Should Win Workers' Confidence

The owners of the Florida Telephone Corporation believe that management should win the confidence of its workers; that it can win this confidence when it stands for better homes, better living conditions, better health, better feeling of security in the future and a genuine interest in the personal welfare of the worker. They believe that if management is to win the confidence of workers, officials must see the world, the economic system and the telephone business through the eyes of the worker, live his life and understand his problems. They must speak his language and convince him fairly, as he is both intelligent and reasonable and when convinced, is always fair and loyal. They believe that confidence begets confidence. The board of directors place unlimited confidence in the integrity of the workers by giving them, not only a voice in management but actual control of its affairs. This naturally creates confidence of the employee body in company officials, causing the groups to cooperate in the best interests of each other, which in turn is reflected in an improved service to the public.

The directors believe that industry should provide easy access to and contacts between officials and workers; that no official should be too busy to welcome a visit from a subordinate; that these contacts create an interest and loyalty on the part

of the worker which raises his morale and increases his value to the business.

The management believes in play as well as work. At frequent periods officials and employees get together in social affairs and picnics. The company owns a fishing cruiser in which officials and employees, on week ends, enjoy fishing trips on the Gulf of Mexico. The company uniforms and supports a baseball team of its own plant men who belong to a league playing each Sunday. In the Florida Telephone Corportation, officials do not live in ivory towers and workers do not live on the other side of the tracks. Both groups work and play happily together to advance the interests of each other and the public they serve.

This management does not think of capital and labor as having different objectives. It realizes that the company can not serve workers to the best advantage unless the business operates at a reasonable profit and this is the first objective of management. The next objective is a fair division of the proceeds of the business between employees and stockholders.

This employer-employee form of management is founded upon the premise that the days of master and servant relationship in industry have passed and the day of democracy in industry has arrived; that individuals are not simply means to the end of other individuals; that each individual is an end unto himself and that his personality develops best as he has opportunity for self-direction, assumption of responsibility and free participation in the control of the enterprise in which he shares.

The purpose and advantage of this plan is to bring management close to the employee body and thereby enable it to do the things necessary to make wages and working conditions satisfactory, to improve the service and to discover and develop within the organization latent talent and managerial ability which could never be discovered under the old form of management.

From the company's institutional booklet, under the heading "Our Labor Policy" we quote: "Capital and Labor are, by nature, united in every enterprise. Capital is the asset, the property, the plant which provides the job; labor is the brain, the ability, the vision, the skill, and each, as a going eoncern, is helpless without the other. The interest of capital and labor is so interwoven and inter-dependent that one must not profit at the expense of the other nor be exploited for the benefit of the other.

Max E. Wettstein

"However, labor is dependent upon policies of management and it is the responsibility of management to see that labor, as well as capital, gets a square deal and a fair share of the proceeds of the enterprise.

"It is the duty of management to pay workers the highest wages that the business can afford consistent with sound business principles and policies. However, without an adequate margin of profit, the company would have no credit with which to obtain the capital needed from time to time to meet the demands for service, betterments to the property and to refund its bonds. Failure to protect the interests of investors would result in plant deterioration, loss of business and ultimate bankruptcy, all of which would be detrimental to the interests of employees as well as employers, and the public served."

From the same booklet under the heading: "Twelve All-Year Around Resolutions for Managers and Supervisors" we quote:

(1) I will not criticize a subordinate or manager or supervisor in my own or any other department to any subordinate.

(2) I will not act too "bossy" or grouchy. I will keep a smile, rather than a frown, on my face when contacting those under me. In the business machine's gears, good humor is the grease, grouchiness the sand.

(3) I will have due respect and regard for the feelings of my workers so they will have due respect for me and my authority.

(4) I will not reprimand or discipline a subordinate in the presence of others or in an offensive way. I wfll make the worker feel that I want to help him.

(5) I will be fair and impartial in the distribution of any disagreeable jobs and I will not cultivate the friendship of one or two workers to the exclusion of others. I want to be friendly with all.

(6) I will keep my personal conduct, on and off the job, so that no worker will have "anything on me."

(7) I will guard against letting my authority "go to my head" and make sure that I do not become "puffed up" with my importance and dictatorial in my relations with those under me.

(8) In giving orders I will avoid the curtly "Do this" or "Do that" manner of speaking and substitute for it, "Please do this" or "I wish you would do thus and so."

(9) I will not resent complaints or grievances that may reflect upon me. I know that no one is perfect and if it is justified, I will correct the condition that caused the complaint. It will strengthen my authority and not weaken it.

(10) As the head of my department I will faithfully observe organization routine and not give orders to employees working directly under a supervisor, foreman, plant manager or chief operator under me, for I know it is confusing to any employe to have more than one "boss."

(11) I will keep continually in my mind that the guiding principle in the company's employee-relations policy is to make employment in this company satisfactory to the employee.

(12) Regularly I will examine my conduct with those under me to see how well I am earning the high praise of being a "good boss," for that is the finest compliment that can be paid one in my position.

The Florida Telephone Corporation operates 27 exchanges in central and North Florida with 10,000 stations and 4000 miles of connecting toll circuits. Ocala is the largest exchange with 2600 stations and Leesburg, the company's headquarters, has 1300. The December 31, 1945 financial report lists total assets $2,025,184, total indebtedness $1,100,773 and net worth $924,411. Gross revenue in 1945 was $586,520, operating expenses and taxes $513,502, and net earnings $73,018. At that date there were 210 employees and 9,227 stations.

Although more than half of its exchanges are in small towns with less than 200 stations, the company

(Please turn to page 81)

WORKING WITH STRAND Requires "Know How"

By F. F. McLAIR

General

STEEL strand plays an important part in outside plant. Somewhat greater skill is required on the part of the plant man in the handling of strand than in working with the relatively light line wires. This article discusses and illustrates various features of strand construction. Strand is available in various grades and strengths as shown in Table No. 1.

The utilities grade is most commonly used in the communication and power fields. Strand sizes used in telephone construction are commonly referred to as the 2200, the 6000, the 10,000, and the 16,000 pound types. These designations refer to the approximate minimum breaking strength in pounds. Strand is commonly stocked by the suppliers in coils of 250, 500, 1000 feet and is also available in reels containing 2500, or 5000 feet. Strand should always be ordered in standard lengths from the manufacturer or supplier.

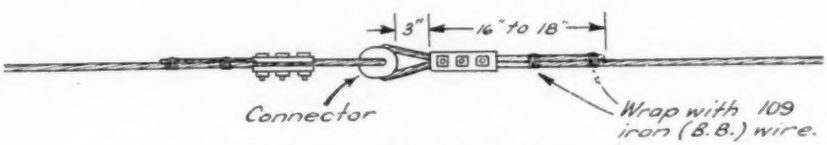


Fig. 1—Standard strand splicing method.

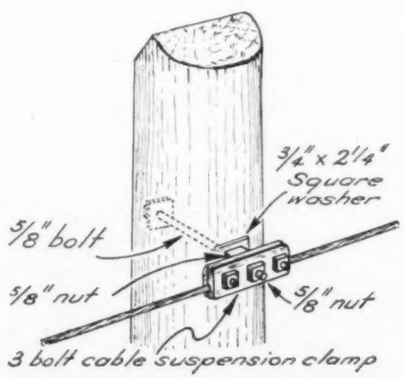


Fig. 2—Standard strand attachment.

Principal Applications of Strand

One of the principal uses of strand is for the suspension of aerial cable. The size of strand required for various size cables is shown in Table No. 2. The weight of various size and gauge cables usually is given in the telephone catalogues. Strand for aerial cable can be pulled out along the ground or pulled directly into the strand supporting clamps. Most construction men prefer to pull the strand through the suspension clamp as this minimizes the possibility of damaging the galvanizing as might happen when it is pulled out along the ground. It also eliminates difficulties due to obstructions that may be encountered. Where strand is pulled in through the suspension clamps, the clamp must be so adjusted that the strand will move easily in the clamp and yet not jump out. The strand reel should be set so that the strand feeds off of the bottom of the reel.

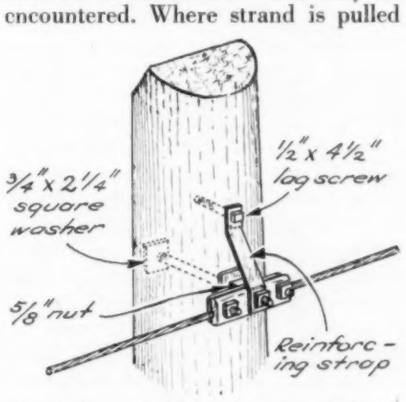


Fig. 3—Use of reinforcing strap with heavy cables.

Strand Splicing

Supporting strand should, if possible, be placed in such lengths as to avoid splices. Where necessary, strand splices may be made either

with a strand connector and a three-bolt clamp or with a patented wedge type clamp. The three-bolt clamp method is standard practice although the wedge type clamps are becoming popular. Fig. 1 shows how a strand splice is made using three-bolt clamps and a connector.

Aerial Cable Attachments

Cable supporting strand should be attached to poles by means of 5/8 inch galvanized through-bolts arranged as shown in Fig. 2. The strand should be placed in the lower groove of the three-bolt clamp. In former years it was customary to place the strand in the upper groove on the theory that it would be less likely to pull out. The use of the lashed cable method of suspending cable makes it desirable that the strand be placed in the lower groove.

If the bolts are kept adequately tight there is no danger of the strand slipping out of the clamp. The supporting bolt should be located at least 10 to 12 inches below the top of the pole if the pole carries only telephone attachments. Where adequate ground clearance can be obtained a spacing of about 18 inches from the top of non-joint poles is preferable. Reinforcing straps as shown in Fig. 3 are sometimes necessary where there is an abrupt change in grade or where exceptionally heavy cable is used.

Steel alley arms are useful when a pole is offset in the line or when the messenger must be held out of normal alignment because of some obstruction. These are used as shown in Fig. 4. Most of the larger companies are now using eyebolt dead ends. The number of three-bolt clamps used at dead ends will depend on the load carried. A single clamp is satisfactory for 6000 or 10,000 pound strand and two clamps should be used with 16,000 pound strand. A dead end junction between a branch and a main feeder cable should be made as shown in Fig. 5.

Strand may be pulled tight either by means of a chain hoist or a block and tackle. If a block and tackle is used, a rope sling and snatch block should be placed above the eyebolt and a short length of strand with strand clamps used to extend the strand through the snatch block to the base of next pole where the block and tackle (or chain hoist) is used to take up slack. The strand must be pulled to the proper tension otherwise the cable may be subjected to undue wear.

(Please turn to page 54)

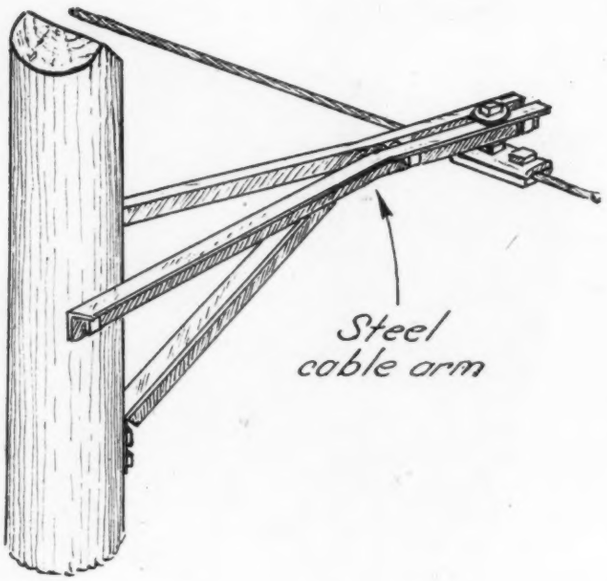


Fig. 4 — Use of steel cable arm.

Number of Wires in Strand	Nominal Diameter of the Strand Inches	Nominal Diameter of Coated Wires in Strand Inches	Approx. Weight of Strand per 1000 Ft. (Lbs.)	MINIMUM BREAKING STRENGTH OF STRAND, LBS. Common Grade	Siemens-Martin Grade	High Strength Grade	Extra High Strength Grade	Utilities Grade *
3	1/4	0.120	116.7	1,821	2,979	4,629	6,600	3,150
3	1/4	0.120	116.7	.....	.....	.....	.....	4,500
3	5/16	0.145	170.6	2,443	4,007	6,214	8,914	6,500
3	3/4	0.165	220.3	3,171	5,186	8,057	11,528	8,500
7	1/8	0.041	31.8	540	910	1,330	1,830	.....
7	5/32	0.052	51.3	870	1.470	2,140	2,940	.....
7	3/16	0.062	72.9	1,150	1,900	2,850	3,990	.....
7	3/16	0.065	80.3	.....	.....	.....	.....	2,400**
7	7/32	0.072	98.3	1,540	2,560	3,850	5,400	.....
7	1/4	0.080	121	1,900	3,150	4,750	6,650	.....
7	9/32	0.093	164	2,570	4,250	6,400	8,950	4,600**
7	5/16	0.014	205	3,200	5,350	8,000	11,200	.....
7	5/16	0.109	225	.....	.....	.....	.....	6,000**
7	3/8	0.120	273	4,250	6,950	10,800	15,400	11,500**
7	7/16	0.145	399	5,700	9,350	14,500	20,800	18,000**
7	1/2	0.165	517	7,400	12,100	18,800	26,900	25,000**
7	9/16	0.128	671	9,600	15,700	24,500	35,000	.....
7	5/8	0.207	813	11,600	19,100	29,600	42,400	.....
19	1/2	0.100	504	7,620	12,700	19,100	26,700	.....
19	9/16	0.113	637	9,640	16,100	24,100	33,700	.....
19	5/8	0.125	796	11,000	18,100	28,100	40,200	.....
19	3/4	0.150	1,155	16,000	26,200	40,800	58,300	.....
19	7/8	0.177	1,581	21,900	35,900	55,800	79,700	.....
19	1	0.200	2,073	28,700	47,000	73,200	104,500	.....
37	1	0.143	2,057	28,300	46,200	71,900	102,700	.....
37	1 1/8	0.161	2,691	36,000	58,900	91,600	130,800	.....
37	1 1/4	0.179	3,248	44,600	73,000	113,600	162,200	.....

*The Utilities Grade is used principally by communication and power and light industries.

**Also called Specification Grade. Can be furnished to conform to Western Union and A. T. & T. specifications.

Table No. 1—Strand Data.

RECOMMENDED STRAND SIZES

Weight of Cable Per Ft.	(Span Length (feet) 150	200	250
1.99 or less	6,000	6,000	10,000
2.00-2.24	6,000	10,000	16,000
2.25-4.99	10 000	10,000	16,000
5.00-7.24	16,000	16,000	25,000

Table No. 2—Recommended strand sizes.

Roland C. Davies
Editor
Telecommunications Reports

Our WASHINGTON BUREAU Reports

By
ROLAND C. DAVIES
and FRED HENCK

Labor

THE GROWTH of the National Federation of Telephone Workers in a few years from a very minor factor in the nation's labor picture to a powerful organization of steadily-increasing influence was never more apparent than after two significant post-Labor Day developments which well illustrated how much weight the union will carry in future management-labor controversies in the industry.

First was the release of statistics showing that by the most conservative standards, the NFTW still packed more than 215,000 members in its bargaining arsenal by the end of August. The membership figure, an increase of 25% in a year, is based on a per capita count of dues-paying members. Since the enrollment figures take a few months to adjust themselves, because of supplementary dues payments by member unions, the total at the close of August may be revised to as much as 227,000 when all reports are in.

That membership weight, still rising regularly, makes the telephone union look definitely muscular as it drives to organize more of the Independent industry. And of equal significance in the Federation's rise are its continued moves toward the establishment of a strong national control to replace the present organization of virtually autonomous member organizations.

At a meeting in St. Louis early this month, the NFTW Constitutional Committee brushed up the draft of the "One National Union" document after receiving suggestions and recommendations from the chieftains of member unions. The new constitution will be presented to representatives of the telephone workers for approval at a convention to be held at the Shirley-Savoy Hotel, Denver, Col., starting November 3. If approved then—and that is certain, in view of the Galveston Assembly "mandate" and the reports of the member union heads—it will then be offered to the full membership for indorsement in a referendum vote.

The size of the telephone union is particularly impressive when contrasted with its only rival on a national scale, the American Communications Association (CIO). The ACA, which can be considered a rival of the NFTW in the telephone field on a national basis only on a technicality, and which embraces New York City telegraph workers, marine radio operators, broadcast technicians, and others, mustered a total vote of barely more than 6000 in its recent presidential election. In the balloting, incidentally, long-time ACA President Joseph P. Selly, who has a lengthy record of apparent Communist sympathizing, scarcely nosed out his rival for the union chieftaincy, after insurgent ACA members charged that Selly was paying too much attention to international politics and not enough to gaining his members concessions in bargaining negotiations.

In the single field where the ACA has bested the NFTW within the telephone industry, the affiliation of the Telephone Traffic Employees Association, bargaining agent of traffic workers of much of the Pacific Telephone & Telegraph Co., with the CIO union, the NFTW has not yet thrown in the towel. The Federation's Washington headquarters says that it has organizers busy on the West Coast, and that it will ask the National Labor Relations Board to call a Coast-wide election for the approximately 50,000 telephone workers in that section. Such a move would include the workers of Independent companies in the area.

In another development in the Independent industry, the NLRB has clarified its decision excluding traffic supervisors from the bargaining unit of the Peoples Telephone Corp., of

Butler, Pa. The Board explained to the NFTW that it considered the traffic supervisors roughly equivalent to assistant chief operators in the Bell System, who are excluded as supervisory employees. The Butler Independent, like a great many others, has no ACO's, but the traffic supervisors have approximately the same duties.

FCC Revising Rules

Moving to comply with the McCarran Administrative Procedures Act, the FCC has revised Part 1 of its Rules and Regulations, and outlined them to members of the Federal Communications Bar Association in a seminar. The new rules pertain to the Commission's own administration primarily, and do not alter any of the "operating" provisos.

In general, the FCC's actions were much less changed by the McCarran Act than those of some of its fellow executive agencies. Commission hearing examiners will be responsible to the Civil Service Commission, rather than the FCC, under the new procedures, although the Commissioners themselves may continue to hear cases, either individually or in groups.

Railroad Radiotelephone

In what was believed to be the first comprehensive installation of radiotelephone operation in any large railway classification yard, a successful test of Farnsworth Television & Radio Corp. equipment was carried out in the Potomac Yard at Washington, September 11.

The installation included a complete intercommunication network linking all major control points in the Yard, enabling supervisory and operating personnel to maintain contact at all times and to monitor all communications between control points and train crews. In addition to mobile radiotelephone equipment in locomotive cabs, remote control equipment was installed on fore and aft locomotive platforms so that train crewmen working on the ground might keep in constant contact with all control points.

The demonstration was attended by a large number of railroad executives, government officials, and press and radio representatives.

Radio in Cabs

Taxicab use of radiotelephone was given one of its biggest boosts last month when three Yellow Cab companies requested FCC authorization for 1800 mobile uits and 13 land stations, estimated to cost more than $1 million. The Yellow Cab of California filed for 1000 units, largest application of its kind ever received by the Commission.

Convention Dates

Michigan Telephone Association, Hotel Olds, Lansing, September 18 and 19.

USITA National Convention, Stevens Hotel, Chicago, Illinois, October 14, 15, and 16.

Virginia Telephone Association, John Marshall Hotel, Richmond, November 7 and 8.

North Carolina Telephone Association, Pine Needles Hotel, Southern Pines, November 11 and 12.

South Carolina Telephone Association, hotel not selected as yet, November 14 and 15.

Alabama Telephone Association, Jefferson-Davis Hotel, Montgomery, November 18 and 19.

Missouri Telephone Association, Hotel Governor, Jefferson City, November 18 and 19.

Georgia Telephone Association, Henry Grady Hotel, Atlanta, November 21 and 22.

Florida Telephone Association, Marion Hotel, Ocala, November 25 and 26.

Nebraska Association, Lincoln Hotel, Lincoln, April 8 and 9, 1947.

The other companies, subsidiaries at San Francisco and Alameda, Calif., asked for 600 and 200 mobile units, respectively. The Mobile Communications Co. is to furnish the equipment, to cost $2117 each for the fixed land stations and $597 each for the complete mobile installation.

Bell System Financing

Biggest telephone news of recent weeks, at least from a dollar volume standpoint, was the Bell System's announcement of its postwar new-money financing program, the largest ever undertaken by a corporation. The System, to finance the postwar expansion and rehabilitation program of the A. T. & T. and its associated companies, will issue $351 million in convertible debentures, given stockholder approvel at a special meeting October 16. The plan calls also for an increase in authorized capital stock of the A. T. & T. from 25 million to 35 million shares.

Included also is an employees' stock plan, under which up to 2.8 million shares may be issued and sold to employees of the A. T. & T. and Bell System subsidiaries. The plan generally retains the Bell System's traditionally high ratio of capital stock to funded debt, regard as a cornerstone of the System's past financial stability.

Signal Association

New address of the Army Signal Association, the organization of wartime military communications personnel and persons associated with the civilian industry, is now 804 17th Street, N. W., Washington, D. C. The Association has moved to its present permanent office from its former temporary quarters on Pennsylvania Avenue. Brigadier General Stephen H. Sherrill, U.S.A. (Ret.) Executive Secretary of the Association, reports a continuing flow of new memberships.

Washington Crosstalk

The spirit in Washington seems to be changing from New Deal days . . . Previously, when New Deal members of Congress barked out their charges against business, the executive agencies frequently acted as "stooges", and came forward with alleged evidence purported to substantiate the accusations.

Two examples of possible changes of attitude have occurred recently. Budget Director James E. Webb informed Senator Glen Taylor, who gained his Idaho Senatorial seat by "hillbilly" radio performances, that the Budget Bureau would ascertain all the facts, in conjunction with the Bureau of Internal Revenue and the Justice Department, and would predicate tax adjustments on the past year's earnings on their findings. Taylor had alleged that businesses were applying exhorbitant charges on the year's earnings and were receiving inordinately high tax adjustments. Mr. Webb said he also would explore the effect of extra reparations awards on the financial conditions of railroads, in line with another Taylor charge.

Then two agencies, the War Contracts Price Adjustment Board and the Office of War Contract Settlement, have slapped back sharply at Controller General Lindsay Warren on his charges of billions of dollars having been given away in war contract settlements. The two agencies said the accusations were "grossly unjust" and that they slandered the vast majority of honest war producers. The agencies brought out that such allegations were only applicable to a small minority of "chiseling" businesses.

Both these instances appear to illustrate that previous smearing of all business or an entire industry for the defects of a few is passing into limbo.

Fig. 4—Sharpening wood bits.

The Old "KNOW HOW"

By B. C. BURDEN,
Technical Consultant,
Lincoln, Nebraska

IT has been said that the only difference between the novice and the old-timer can be expressed in the two words, "*know-how*". "*Know-how*" is something that can be acquired by observation, study and a constant desire to do every job in the best possible manner. A little curiosity and intelligent observation by the novice of the methods employed by skilled workmen will soon put the novice in the "*know-how*" class. Typical of a few simple operations around telephone plants which require merely a little "*know-how*" for expert results are the following:

Wire Terminations

Telephone men are called upon to handle a multiplicity of small wires. Unless these wires are properly terminated they will look bad, work poorly, and in general not do a satisfactory job. Take the simple proposition of placing a wire around a threaded-type binding post. The Old-timers are careful to place the wires, after proper cleaning, between the two washers usually provided and in a *clockwise direction* around the post so that when the nut is tightened it will tend to wind the terminated wire more tightly around the binding post rather than unwind it as would be the case if it were placed in the opposite direction.

Repairing Insulation on Switchboard Wire

In working with switchboard wires the textile insulation may become damaged, exposing the bare wire. To make a repair in a case of this type, the novice would undoubtedly apply a layer of friction tape but the old-timer with his "*know-how*" would take a piece of insulation of the same type and color and make a "factory type" repair as shown in Fig. 1. To make the repair completely effective the old-timer would then melt a little beeswax (using a hot soldering iron) into the repaired insulation thus insuring a neat and satisfactory repair.

The novice is usually inclined to take off too much insulation when

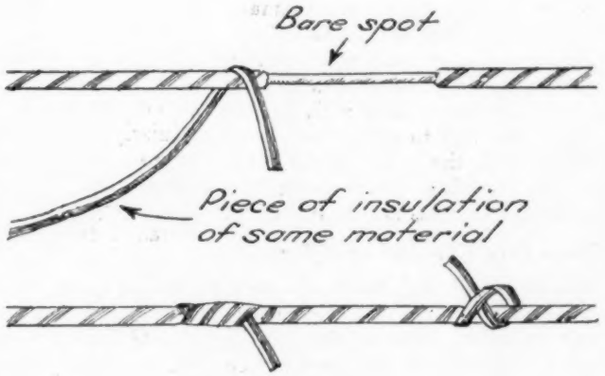


Fig. 1—Method of making factory-type repair of switchboard cable conductor.

terminating wires. This leaves an unsightly bare space that may cause circuit trouble. There is also a tendency to fail to provide adequate slack and to "dress" the wires properly. Fig. 2 illustrates several types of wire terminations and shows the neat and uniform manner in which the wires should be attached to terminal lugs.

Removing Insulation From Wires

Insulation from main frame switchboard wires can be removed in various ways: Some pliers are equipped with notches which slit the insulation and make it easy to remove. The insulation can also be easily removed from small wire by crushing it between the handles of a pair of diagonal or long nose pliers. This method will work satisfactorily with most of the smaller gauge insulated conductors found in telephone offices. However, it is subject to the objection that unless it is carefully done the copper wire may be damaged. After the insulation is removed a regular wire scraper should be used to remove any oxide or enamel on the wire. The ends of the insulation if frayed should be trimmed close to the wire.

Use of Screw Drivers

No one would admit that a screw driver is a complicated tool, yet a novice can do more harm than good in some cases by the improper use of a screw driver or by failing to keep the screw driver in proper condition. A common mistake is to attempt to do too many different jobs with a single type of screw driver. It takes more than one kind of screw driver for the various jobs encountered. A tool kit should contain at least three different types of screw drivers.

A screw driver blade should be so shaped as to make its edges as nearly parallel with the slot in the screw as is possible. A wedge shaped screw driver will tend to slip out of the groove and damage both the screw and the screw driver.

The secret of using a screw driver on "hard to drive" screws is to keep the screw driver vertical with respect to the screw and to apply downward pressure with the palm of the hand and the twisting effort with the fingers and wrist as shown in Fig. 3.

Sharp Bits Cut Labor Effort

The beginner and dull tools make a poor combination yet this is the usual situation because the novice does not appreciate the importance of keeping tools sharp. This is particularly true of wood bits used in connection with the installation of telephones. A dull bit will double the energy and time required to install a telephone.

Bits can readily be resharpened without much "know-how" if a few simple rules are followed. The *spur* should be sharpened by holding the bit at an angle as shown in Fig. 4 and the inside edges filed to restore the cutting lip. Under no circumstances should metal be taken off the outside edge as this will cause the bit to bind in the hole. Remove as little metal from the spur as possible.

The *cutting edge* is sharpened by holding the bit against the workbench top as shown in Fig. 4. The cutting edge angle should not be

(Please turn to page 76)

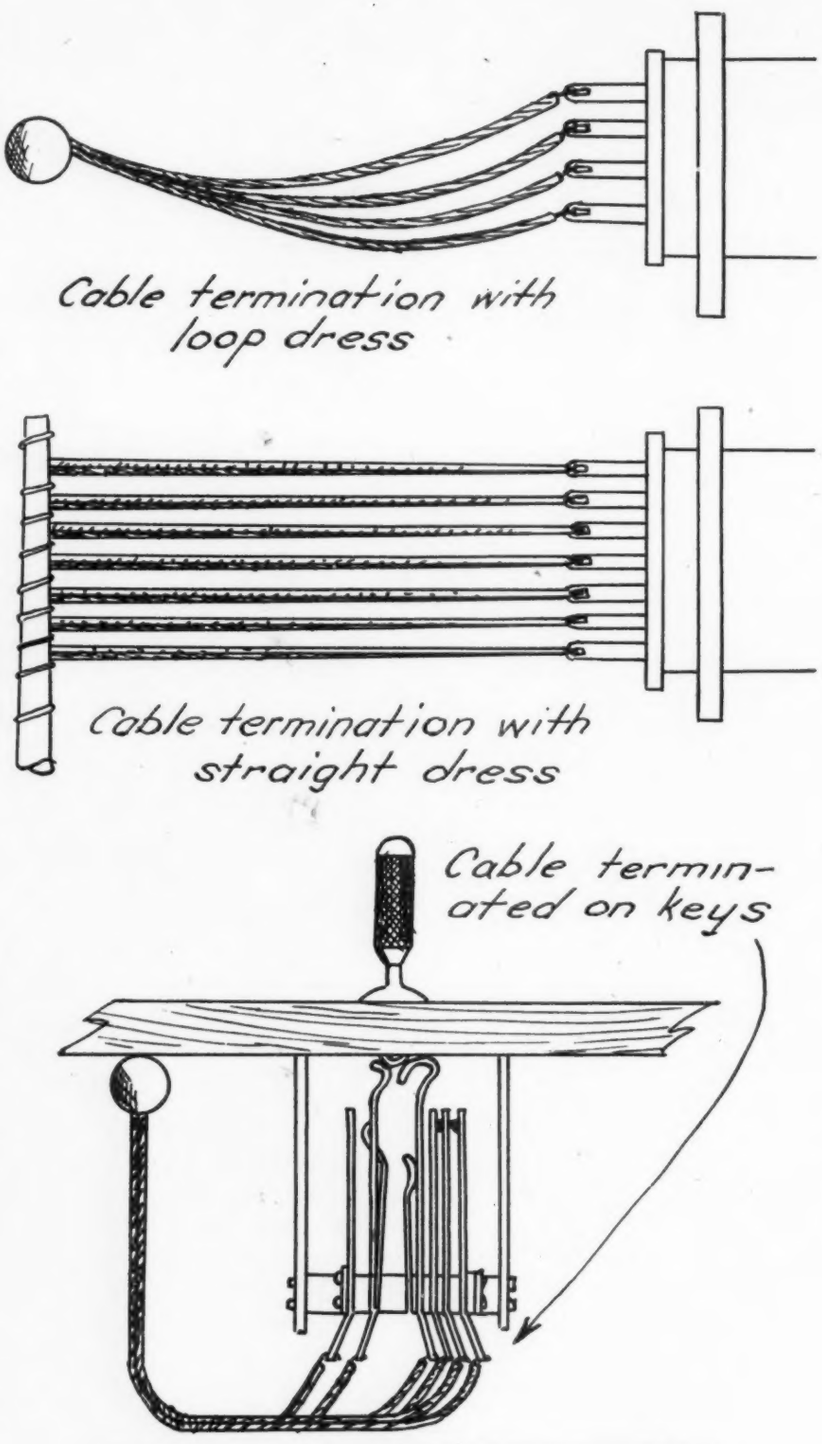
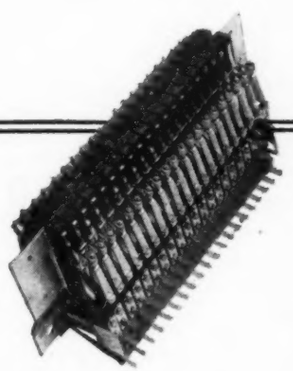


Fig. 2—Typical wire terminations on telephone equipment.

GUESSWORK ELIMINATED

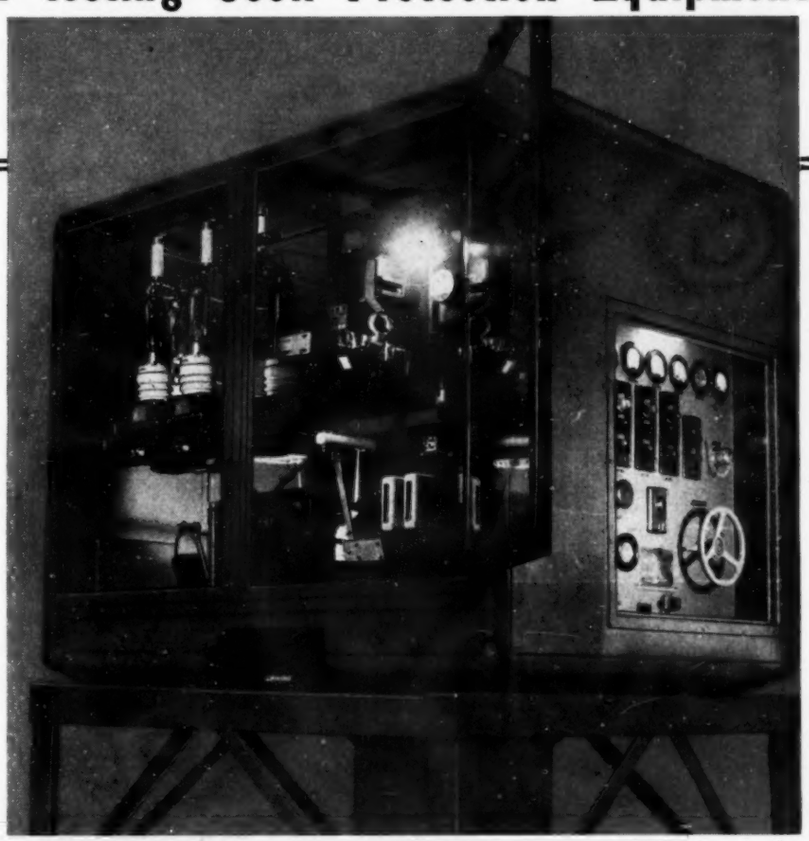
In designing and testing Cook Protection Equipment



NO. 3800 CENTRAL OFFICE PROTECTOR

Combines cable termination with protection of central office personnel and equipment against high potentials and sneak currents. In operation, it opens the switchboard circuit, grounds the outside line and operates an alarm circuit. Note these construction and operating features:

1. Provides for temporary disconnect.
2. Self-soldering, low-resistance heat coils easily reset after operation without changing, reversing or resoldering coils.
3. Line and switchboard connections on opposite sides of protectors.
4. Steel mounting plate for maximum strength.
5. Unit dischargers, consisting of two carbons, separated by acetate dielectric cemented together, permanently grounds the outside line under continuous discharge.
6. Easily tested without removing heat coil; withdrawal of test plug leaves protector in operating condition.



This AC-DC High-Voltage Generator of large current capacity, in the physics laboratory of Cook Electric Company, is used to study strength of dialectrics, effectiveness of discharger gap surfaces, current surge capacity of protector parts and conductors, and insulation characteristics.

These data are required in rating and designing, without guesswork, Cook sub-station, pole cable terminal and central office protectors, long the standards of dependability in the independent telephone industry.

COOK ELECTRIC Company

Telephone Protection & Distribution Engineering Since 1897

CHICAGO 14, ILLINOIS

9 Reasons WHY YOU SHOU

The Ungar ELECTRIC SOLDERING PENCIL

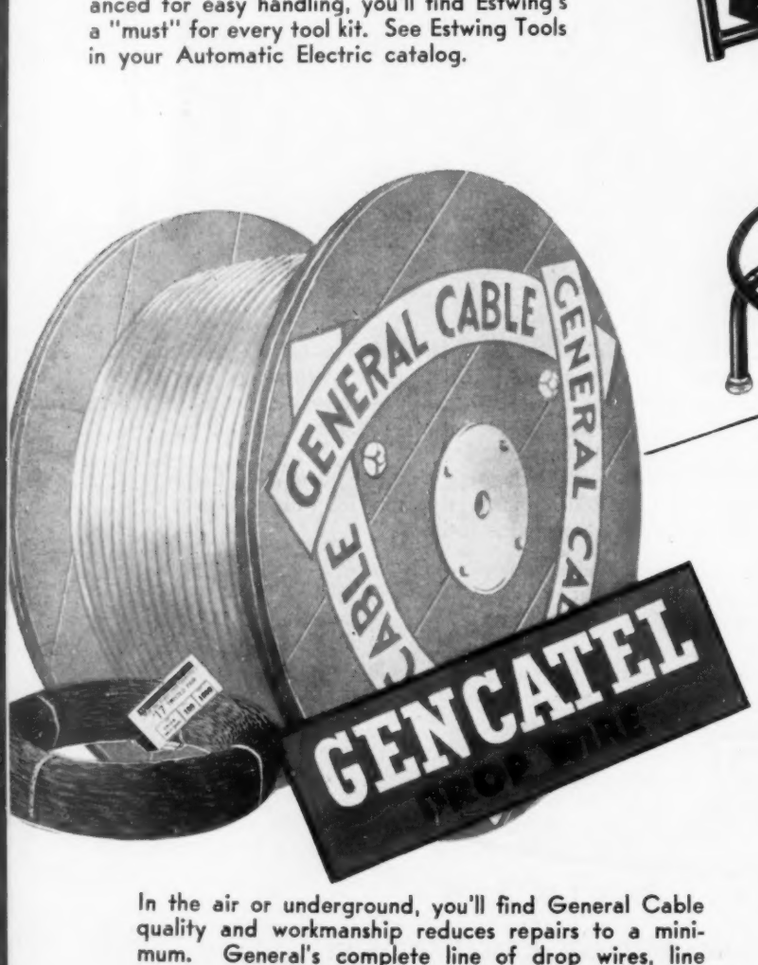
Lightweight . . . easy to handle, the Ungar Soldering Pencil is ideal for intermittent work on those hard-to-reach soldering jobs. Quickly interchangeable tips make it a practical tool for everything from the most delicate operation to many larger soldering tasks.

ESTWING TOOLS

Every telephone repairman will appreciate the "rough and ready" construction of each Estwing tool. Built to stand the gaff and balanced for easy handling, you'll find Estwing's a "must" for every tool kit. See Estwing Tools in your Automatic Electric catalog.

HARTER METAL CHAIRS

Here's a sturdy all-metal chair that has all the comfort features that every operator appreciates. Completely adjustable, the Harter chair reduces fatigue . . . increases operator efficiency. Be sure your next operator chairs include the exclusive Harter posture-aid features.



In the air or underground, you'll find General Cable quality and workmanship reduces repairs to a minimum. General's complete line of drop wires, line wires and cables assures you of a product just right for every demand—a high quality product that is durable and practically trouble-free.

Tuffy "POWER-ARM" SCREWDRIVER

Powerful, convenient, and ***guaranteed for a year***—"Tuffy" is a real screwdriver for the lineman, trouble shooter or mechanic. Can't slip — and its folding "power-arm" gives you that extra "umph" to drive a screw home or break it loose. Kit includes three sizes.

IOULD KNOW *Otto Matic!*

He's your Automatic Electric Representative. He brings you these top-quality tools and materials—made by reputable manufacturers, selected for you by Automatic Electric's supply experts, and each one tested and approved by Automatic Electric laboratories. Because of heavy demand for these high-grade products, deliveries are sometimes slower than we'd like, but the manufacturers are doing their best to meet all requirements, and as quickly as possible we'll be rushing your supplies to you. Meanwhile, let your Automatic Electric representative keep you posted on the newest and best in materials, tools and equipment.

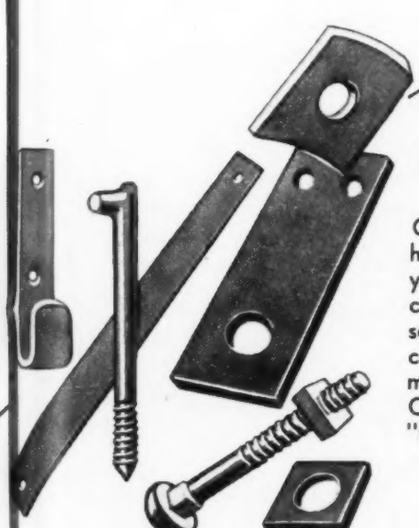
DICKE TOOLS

You'll find the Dicke Folding Take-Up Reel and Pike Pole are real necessities for outside plant construction. These husky tools were designed to save time and money on the job. Be sure to specify Dicke for your construction needs.

"LARC-O-MATIC" RATCHET WRENCH

Here's the best and easiest-to-use wrench you'll ever own. Just slip over the nut or bolt and Larc-O-Matic adjusts itself automatically. No slow thumbscrew adjustment . . . no guessing the size wrench needed. Has positive grip—will not slip.

OLIVER POLE LINE MATERIALS



Oliver's fifty years in the telephone hardware field assures you of hardware you can depend upon . . . hardware that cuts down replacement costs . . . stresses quality and staying power. In the construction of new lines or replacement of old line hardware, you'll find Oliver quality goes a long way in "holding that line".

It's What's Inside That Counts

"BLACK BEAUTY" POLES

PRODUCT OF TEXAS CREOSOTING COMPANY

Pole your lines with Black Beauties—completely armored against pests—and you rest assured of years of trouble-free service. The Texas creosoting method keeps out termites, fungus, decay and other hazards that weaken and shorten the life of your poles.

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILLINOIS

Economy in cable plant, over a period of years, is possible only when you select a cable you can depend on . . . a cable with ability to outlast normal needs, with low maintenance costs. That's General Cable!

In the complete line of General cables, you'll find just the right cable to do your specific job economically. All General cables are made right, with the finest materials to assure greatest ease of handling, the highest transmission quality, and the economy of a virtually trouble-free plant.

When you buy cable, be sure you get the protection and economy of General Cable quality. Order from the big Automatic Electric catalog.

MANUFACTURED FOR

AUTOMATIC ELECTRIC COMPANY
By GENERAL CABLE COMPANY

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC
SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILLINOIS

Fig. 1 — Attractive steel sign suitable for curb or building mounting.

Good Signs Identify Telephone Properties

By B. C. BURDEN,
Technical Consultant,
Lincoln, Nebraska

The public should never have difficulty locating a public pay station or the telephone office. The small cost of fine appearing steel enameled signs that are now available warrants the installation by every company of adequate signs that will properly identify pay stations and the telephone office.

A STRANGER in passing through a town served by a Bell System company seldom has difficulty in locating a public pay station or the telephone office. Bell companies see

Fig. 2—Illimunated globe sign for marking office entrances.

to it that every exchange has an adequate system of signs which will lead the public to the nearest pay station or to the telephone office. Most of the larger Independent companies have done an equally good job in letting the public know where to find telephone facilities but many small single unit companies are doing a remarkably good job in concealing the location of public pay stations and even the telephone office.

On a recent trip to a nearby state your editor found occasion to make a long distance call from a small town. A drive up and down the town's main street failed to locate any indication of the presence of a pay telephone. He then set out on a still hunt for the telephone office, on the assumption that there would at least be a pay station in the telephone building. The building finally was located by following some of the main aerial feeder cables to their source. The telephone office had one small wooden sign directly above the door which proclaimed to the world in a weak small voice that this was the "*telephone office.*"

Certainly the small cost of the fine appearing steel enameled signs that are now available should warrant the installation by every company of an adequate set of signs, unless telephone service is so poor that it doesn't pay to have the

Fig. 3—Decalcomania type transfer sign for use on glass doors, cars, etc.

telephone office too conspicuously marked.

The telephone office should be designated by a sign readily visible to pedestrians and cars approaching in either direction. Pay telephones

36 years of Telephone Printing

For over 36 years the Suttle Equipment Co. has maintained an up-to-date print shop, specializing in telephone company work.

This long experience, plus our honest effort to always give top notch quality and the best of service adds up to this one thing—

IT WILL PAY YOU
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TELEPHONE PRINTING
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SUTTLE EQUIPMENT CO.
LAWRENCEVILLE, ILLINOIS

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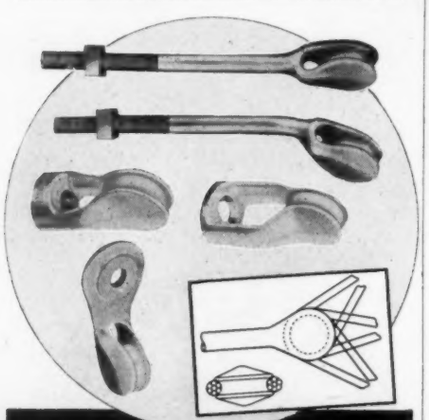

New CHANCE THIMBLEYE
...gives complete
strand protection...

Chance Thimbleye Guying Fixtures have been redesigned to give added protection to guy strands at varied angles of pull (see sketch). The improved eye forms a perfectly shaped "thimble" at all angles as the strand groove extends all the way around to form a complete circle.

Always specify Chance Thimbleye and get these latest improvements. Order through your regular source of supply.

A·B·CHANCE CO. · CENTRALIA MISSOURI

in filling stations should be designated by signs readily seen from the road. Pay telephones in hotels and other places should be properly designated on the outside of the building if feasible.

Signs are available from the telephone supply houses that are suitable for most requirements. The sign shown in Fig. 1 is ideal for mounting near the curb on a steel pole to point to the telephone building. This sign is particularly useful where the telephone office is in a residential section or on a side street and in the business district hard to locate. Illuminated globe signs of the type shown in Fig. 2 are useful for downtown locations where curb signs would be impractical.

Fig. 4—Steel flange sign for marking booths.

Fig. 3 shows a decalcomania type transfer sign which can be used on telephone booths, main entrance to a telephone building, and on company cars and trucks. These water transfer type signs present a fine appearance and every company vehicle should carry one on each side. No particular experience is required in applying these transfers and full instructions are usually furnished with them. They can be applied on any glass or metal surface, that is, reasonably smooth and free from cracks. When the transfers are used on automobiles it is generally desirable to coat them with a clear lacquer or varnish.

Public pay telephones in filling stations can be adequately marked by means of a small flange suspension type sign of the type shown in Fig. 4.

The Independent telephone industry is still in real need of a standard symbol which will tell the world that telephones in the United States are not entirely Bell-operated. This would seem to be a worthwhile project for the advertising institute to sponsor.

Directory Holders

ONE of the little irritating experiences of a telephone company is the necessity for periodically replacing directories carried off from public pay telephone booths. The public seems to feel that anything that belongs to a public utility that is not fastened down should be carried away. Directory holders are available through suppliers or may be easily improvised in the telephone repair shop. For use on the sloping directory desks which are often provided just outside of telephone booths, the holder shown in Fig. 1 will cut down loss of directories to a minimum. This holder can readily be made from light gauge iron stock bent in the form of a "U" as shown in the illustration. The rod should be one quarter inch in diameter and the retaining wire should be either a small stiff steel rod or a piece of 109 galvanized iron telephone wire.

When the directory is hung inside of the telephone booth, a chain holder as shown in Fig. 2 will serve satisfactorily. If the directory is not punched in the upper left hand corner, a satisfactory hole can be made using an ordinary steel drill. The shock spring shown is necessary only for heavier directories.

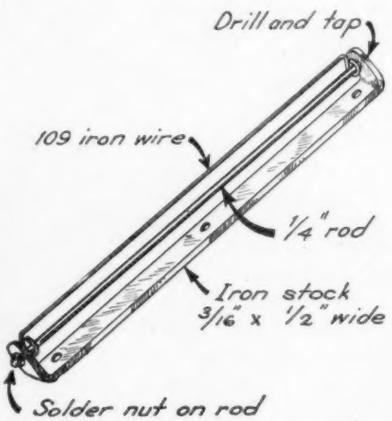

Fig. 1—Directory holder (Bell System style) for table mounting.

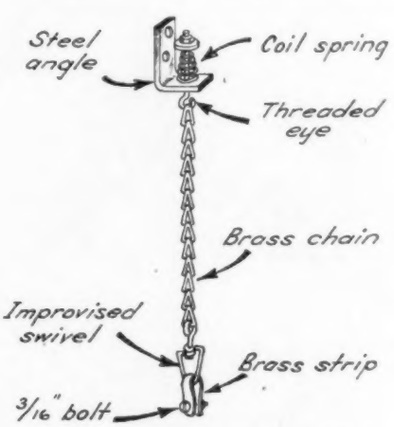

Fig. 2—Directory (Bell System style) for booth mounting.

Legal News of COURTS and COMMISSIONS

Approve Sale of Three North Dakota Companies

Sale of the Dakota Automatic Telephone Company, Community Telephone Company and Park River Telephone Company which serve the towns of Mohall, Park River, Washburn and surrounding territory, has been announced by E. C. Gates, vice president of the North Dakota Telephone Company, purchasing organization.

The new owners will carry out the general policies of the former operator, T. P. Clifford, according to Mr. Gates, and the sale of the property will not affect the existing organization which will be kept intact.

"Under Mr. Clifford's able management", said Mr. Gates, "the people served by the three companies have received good telephone service. It will be our aim to improve that already high standard of service and to speed up the present plant construction and expansion program. We have ample resources for the purpose and every confidence in the progressive character of the communities being served".

The sale of the properties to the North Dakota Telephone Company was approved by the North Dakota Public Service Commission August 2.

Mr. Gates, the new vice president and general manager, has his headquarters in Minneapolis where he is widely known as a highly successful public utility executive with long experience in the telephone field. Other officers of the purchasing organization include K. D. Knoblock, president and Frank A. O'Neill, secretary and treasurer, both of Chicago, Illinois.

◆

Petition for Rate Increase

A rate increase has been requested of the California Railroad Commission by W. F. Smith, operator of the Capay Valley Telephone System at Brooks.

Permits Granted for Two Class 2 Stations

The Southern California Telephone Company has been granted construction permits for two experimental Class 2 radio stations, one at San Diego, California, and the other at Mount Woodson, for relaying transmission from mobile units in connection with the development of short-distance toll radiotelephone service.

◆

Council Intervenes With Rate Offer

In what may be establishment of a precedent, the City Council of Fort Dodge, Iowa, entered into the negotiations of workers of the Fort Dodge Telephone Company August 15 with a suggestion that the townspeople would pay higher rates for telephone service if the company would grant the 100 workers, represented by the Northwestern Union of Telephone Workers (NFTW), a wage increase comparable to wages being paid telephone workers in Iowa towns of the same size.

The City Council intervened following a walkout by workers on August 15. An agreement was reached then by the council and the company that the workers would return on the basis of the Council's suggestions with bargaining to be resumed August 27 before a Federal Conciliator. The Council had previously passed a resolution guaranteeing both the company and the workers action on its proposals and asked the company to prepare a new rate schedule.

Minnesota Telephone Company Purchases Three Independents

The Minnesota Railroad & Warehouse Commission on August 21 authorized the Minnesota Telephone Company to purchase properties of the Kenyon (Minn.) Telephone Company, the Intercounty Telephone Company, and the Hollandale (Minn.) Telephone Company.

Authority was also granted to the Tri-County Cooperative Telephone Association to purchase properties of the Eastern-Irving Telephone Company in Union Grover and Irving townships.

◆

Taxi Companies Request Radiotelephone Permits

Confidence in the use of mobile radiotelephone as a major contribution to greater efficiency in taxicab operation was shown by the recent application of Yellow Cab Company, Inc., through three of its subsidiaries, for FCC authorization of the installation of 1,800 mobile units and 13 land stations to cost more than $1 million. At the same time the Yellow Cab Company of California has filed for 1,000 mobile units, the largest application of its kind so far received by the Commission.

Two other Yellow Cab companies, subsidiaries at San Francisco and Almeda, California, have requested 600 and 200 mobile installations, respectively. A fourth Yellow Cab company, at Roanoke, Virginia, has filed a lesser application for 60 mobile stations to operate with one land station.

The Yellow Cab Company of California, with headquarters at Los Angeles, will install 1,000 mobile units to operate with seven land stations following FCC approval. Cost of the individual land stations is to be $2,117 each and complete mobile installations will be $597 each.

Two other taxicab companies have filed for installations. Kramp's Taxi Company, Newburgh, New York, has applied for one land station and five mobile units. The Pollard Taxi Company will set up one land station to operate with 30 mobile units.

◆

Rate Increase Sought For Covington, Indiana

The Fountain Telephone Company, Covington, Indiana, has applied for authority to increase rates. The company also requested that the exchange in Foster be abandoned and placed on the Covington system and the Stone Bluff exchange be abandoned and divided between Attica, Veedersburg and Covington.

The Fountain company also submitted evidence on the need of a new switchboard, buildings and lines and asked that the increase be sanctioned on these grounds.

◆

Labor Department Discusses Women Telephone Workers

A 38-page pamphlet, titled "The Woman Telephone Worker," recently issued by the Women's Bureau of the U. S. Department of Labor discusses the importance of the woman worker in the telephone industry and describes the duties of the various classifications of occupations filled by women. It also discusses working conditions as well as presenting certain limited information relating to wages. According to the booklet, out of 365,000 employees in the telephone industry, 265,000 or 72½% are women. Four out of five women in the traffic department are operators. "From the standpoint of numbers employed, the telephone business is a women's industry," the booklet says.

The study was made at the request of the Traffic Panel of the NFTW. It is based in the main on a field survey in six areas, five serviced by the Bell System and one by an Independent. Copies of the pamphlet (No. 207) may be obtained from the Government Printing Office, Washington, D. C., for ten cents.

◆

Dial System Installed In New Market, Minn.

Superintendent John Packer of Scott-Rice Telephone Company, Prior Lake, Minnesota, and I. C. Proctor, have converted the entire New Market, Minnesota, exchange to dial service.

The system in New Market has about 150 subscribers, and the work was completed September 1.

Common Battery Installation Planned for Linn, Missouri

The Ozark Central Telephone Company, St. Louis, Missouri, has announced its plan to spend $42,000 to install common battery service at Linn, Missouri, to serve the city and adjoining towns.

J. C. Leader of the company's St. Louis office, recently discussed the plan before the Lions Club.

He explained that rates would be higher; approximately $3.00 per month for a business and $2.25 for a residence. The present rates are too low under present operating costs and will have to be adjusted, Mr. Leader said.

If subscribers are interested in service the company plans to rebuild all lines into Linn with the company assuming full ownership and any new rates would not become effective to subscribers served by that line until the line was finished and service into Linn completed. Now most of the rural lines are owned jointly by the company and the patrons.

The company has expended approximately $5,000 since purchasing its present building and moving the switchboard.

By John Berry
Courtesy Play Magazine

FCC Denies Petition of Alaska Radio

The petition of Alaska Radio, Inc., requesting special temporary authority to install and operate a fixed public radiotelephone and radiotelegraph station at Anchorage, Alaska, was denied by the FCC August 15, but the commission left the door open for the company to request hearings on a regular construction permit for the station.

The FCC order said that "substantial issues of fact are presented concerning the public need for the establishment and operation of such station and the effect on the public interest of authorizing facilities and services which would duplicate the existing facilities and services of the Alaska Communication System." (It was understood that the Alaska Radio petition had charged that the service furnished by ACS, operated by the Army Signal Corps, is inadequate.)

Remarking that the issues presented by the petition could be determined only after public hearing, the commission specified that its denial of the requested special authority would not prejudice an application for a regular construction permit.

◆

Bell Directorships Requested For Three Officers

The American Telephone & Telephone Company has filed application with the Federal Communications Commission requesting authorization for Vice President William H. Harrison, in charge of operation and engineering, to hold the position of director of the Bell Telephone Company of Pennsylvania, in addition to the position of vice president and directorship with the Wisconsin Telephone Company.

In other applications the AT&T requested similar FCC sanction for Vice President Cleo F. Craig, in charge of personnel relations, to become director of the Southwestern Bell Telephone Company, and Keith S. McHugh, vice president in charge of the information department, to be director of the Ohio Bell Telephone Company as well as his present directorship of the Michigan Bell.

The Bell Telephone Company of Pennsylvania requested authorization for Harold S. DeLuc, who becomes its vice president in charge of public relations on October 1, succeeding Peter L. Schauble, to occupy a similar post with the Diamond State Telephone Company.

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Save up to 20 poles per mile

WITH U·S·S AMERTEL
LONG-SPAN CONSTRUCTION

SPANS of 350 feet to 450 feet are possible with U·S·S Amertel 135 high-strength wire, depending on whether the loading is heavy or light. This means approximately 16 poles to the mile for heavy loading and 11 poles for light loading.

With Standard "BB" wire, spans of 150 feet for heavy loading require at least 36 poles and 300 foot spans for light loading require 18 poles.

Of course, the longer spans require taller poles but the savings possible with Amertel long-span construction makes rural lines much cheaper to build.

Better transmission efficiency is also obtained with Amertel 135 because of its low electrical resistance at voice frequencies.

These advantages of U·S·S Amertel have made it widely used for rural lines and telegraph systems. Write for our booklet, "Amertel 135", giving complete information.

American Steel & Wire Company
Cleveland, Chicago, New York
Columbia Steel Company, San Francisco
Pacific Coast Distributors
Tennessee Coal, Iron & Railroad Company, Birmingham, *Southern Distributors*
United States Steel Export Company, New York
UNITED STATES STEEL

Look for this tag
It is your assurance of highest quality wire.

Virginia T&T Elects New Directors

Three Virginians were elected to the board of directors of the Virginia Telephone & Telegraph Company at a stockholders' meeting held in Charlottesville, Virginia, August 12. The three new Directors named are: B. L. Fisher of Martinsville, David J. Wood and L. D. Densmore of Charlottesville.

B. L. Fisher

Mr. Fisher has spent his lifetime in telephone work in the state of Virginia and is recognized as an outstanding authority in this field. Starting in the telephone business in 1903, he organized and placed in operation telephone exchanges extending from Roanoke, Virginia to Winston-Salem, North Carolina. He is the principal owner and president of the Lee Telephone Company, which serves Martinsville and several other communities in Virginia, in addition to several others in North Carolina. He is past president of the United States Independent Telephone Association, and continues to serve as a director of that group.

Mr. Wood, who is a native of Albemarle County, Virginia, maintains his law offices at Charlottesville, where he has practiced since 1922. After attending high school at Alexandria, Virginia, Mr. Wood was graduated from the University of Virginia in 1922, and is now serving as president of the Charlottesville and Albemarle County Bar Association. He was formerly a director in the Peoples National Bank of Charlottesville and the National Bank and Trust Company, and is presently a director of the Peoples Mortgage Company, the Charlottesville Perpetual Building & Loan Company and the Herbert Cold Storage and Ice Company, Inc.

Mr. Densmore, who is vice president and general manager of Virginia T. & T., recently returned to Charlottesville as operating head of the company's telephone properties in Virginia, after having served as a colonel with the military forces in Italy.

Mr. Densmore has recently established a complete operating office and staff at Charlottesville, including department heads for plant and engineering, traffic, commercial and accounting departments.

L. D. Densmore

Others that will serve on the board with the three newly elected, are Max McGraw, Chicago, Illinois, president of the company, and R. A. Phillips, vice president. In announcing the new appointments to the board, Mr. McGraw stated: "The Company has extensive plans for additions and replacements to their properties throughout the state of Virginia, and the familiarity of the new directors with the territory the company serves, and its needs, should even further assure that the construction program will be carried out in an expeditious and orderly manner."

◆

George B. Porter Dies

George B. Porter, FCC assistant general counsel in charge of broadcast litigation until 1940, died August 12 in San Francisco at the age of 45. Mr. Porter, the son of Interstate Commerce Commissioner Claude R. Porter, became assistant general counsel of the Federal Commission, the FCC's predecessor, in 1931. He later became acting general counsel, and was appointed to the broadcast legal post in October, 1934, after the establishment of the FCC.

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Hemingray No. 42. Standard for many years. Its long leakage path keeps toll lines trouble-free.

Hemingray Insulators have served the telephone and telegraph industry for more than three-quarters of a century.

Proof against every kind of weather and every temperature change, Hemingrays have won universal confidence.

That's why leading telephone and telegraph companies have adopted Hemingrays as *standard equipment.*

These famous insulators are manufactured by Owens-Illinois, Hemingray Division.

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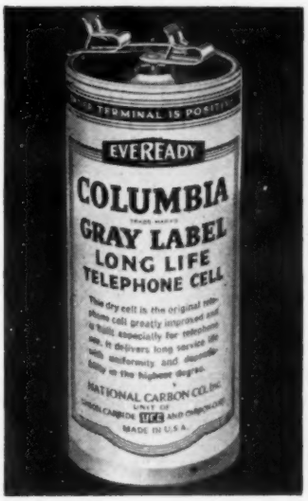
BRANCH OFFICES: CHICAGO 6, KAN CITY 8,

G. CARLSON Recommends

long life telephone dry cells

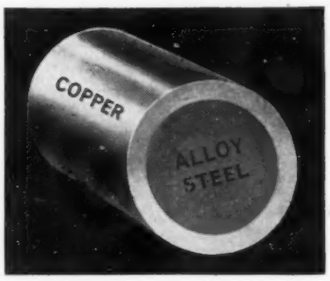
"Eveready" "Columbia" "Gray Label"



Higher sustained voltage . . . longer life . . . rock-bottom economy—these qualities are assured through the constant supervision of America's largest dry battery laboratory.

Made by the makers of the famous "Eveready" "Air Cell" Operators' Transmitter Batteries.

THE QUALITY CELL PREFERRED BY TELEPHONE ENGINEERS



buy breaking strength plus life...

buy copperweld

guy and messenger strand!

When you select Copperweld for your guying and messenger jobs, you don't need to buy oversize strand as a protection against later loss of strength due to rust.

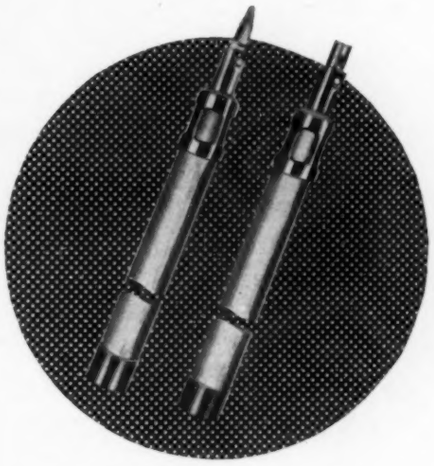
Copperweld *can't* rust—its original strength is permanent. This means fewer replacements and lower initial cost, because you buy smaller diameters and fewer pounds of non-rusting Copperweld.

Copperweld features a strong steel core protected from deterioration by the thick exterior of copper inseparably molten-welded to the steel. You "guy for the life of the line" with Copperweld's copper-protected strength.

For the cheapest and best overall investment you can make in guy and messenger strand, specify COPPERWELD, the thriftiest answer to your maintenance problems!

for added safety... specify

chance pike poles!



The new Chance Reversible Point Pike Pole features a removable point, made in a separate piece, flat on one end with a gimlet point on the other. A spring catch in the ferrule holds the point in place.

When carrying the pole on the truck, the point is inserted point-first into the ferrule, thus eliminating the hazard of sharp projections.

The gimlet or spiral point holds without slipping. When worn, it can easily be replaced without buying a complete new pike pole. Pole splitting under strain is greatly reduced through the means by which the ferrule is attached to the pole. The base of the pole is also protected by a pole band.

Chance Pike Poles are made of Douglas or Western Fir, free from all defects and lacquer finished. The ferrule is high-grade malleable iron, the removable point of steel, heat-treated. Ferrule and pike are available separately.

R. CARLSON FACTORY, GENERAL OFFICES: ROCHESTER 3, N. Y.

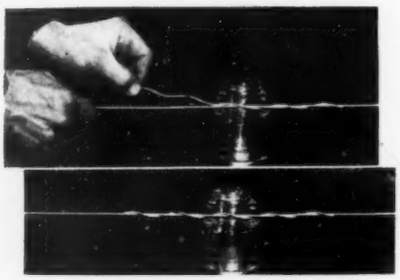
KANSAS CITY 8, SAN FRANCISCO 3. IN CANADA: STROMBERG-CARLSON COMPANY LIMITED, TORONTO

STROMBERG Telephone CARLSON

Introducing
Wiggle - Wires

(Saves money on wire maintenance)

These preformed 10" wires prevent conductors from coming in contact with insulators and resulting in abrasion. Dampening the vibration saves conductors and insures LONGER LIFE.



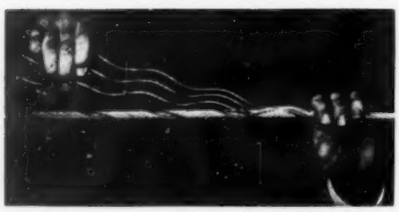
No tools—No experience necessary to install wiggle wires.

Tied to insulator with ordinary tie-wires with a slight change in regular manner of tying.

PRICE $2.00 per 100.

SPLICE
Messenger Strands with Wiggle Wires

Eliminate insulators and clamps. They are expensive and take tools and experience to properly install. Make your splices smooth so a spinning machine can roll over them easily.



Wiggle Wires for splicing ⅜" Siemens-Martin messenger strand are 52" long. Takes 10 Wiggle Wires to make a splice. Wiggle Wires will hold full strength of Siemens-Martin grade and high strength strand. No tools—**No experience necessary to install. PRICE $40.00 per 1000.**

STANDARD ELECTRIC COMPANY

P. O. Box 5—Station D
Cincinnati, Ohio

Working With Strand Requires "Know How"

(Concluded from page 38)

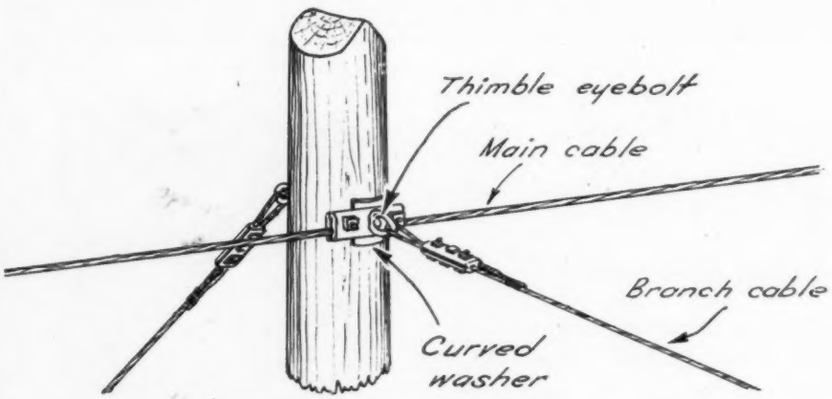


Fig. 5—Method of dead ending a branch strand and main strand.

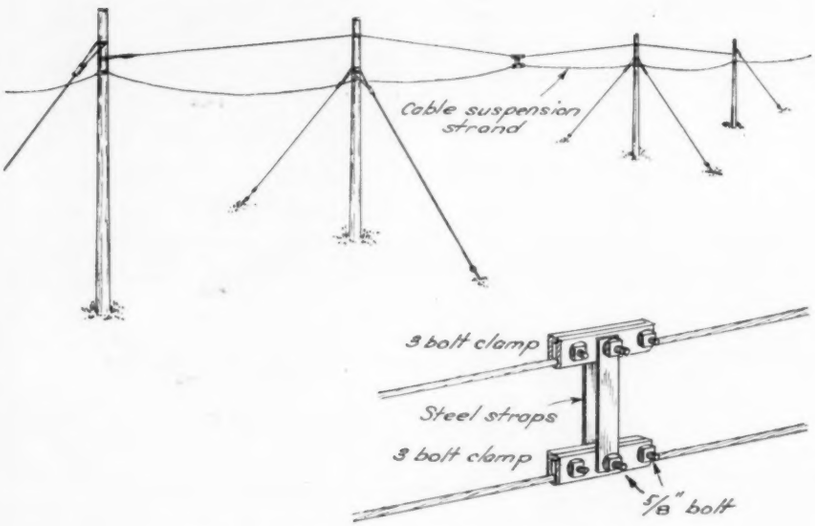


Fig. 6—Special construction for long cable spans.

A strand dynamometer permits the accurate measurement of strand tension and its use is recommended. On short lengths of supporting strand, as for example, runs of 10 to 12 spans, the tension should be measured in the middle of the run. On larger runs, the tension should be measured at several locations.

Long Span Construction

Usually long cable spans require special construction similar to that shown in Fig. 6. The suspension strand should be the same size as the cable supporting strand. The two strands should be fastened together at the mid point of the span by means of the two three-bolt clamps and special iron straps arranged as shown in Fig. 6. The suspension strand should be adjusted so that the supporting strand has the same sag in the long span as in adjacent spans.

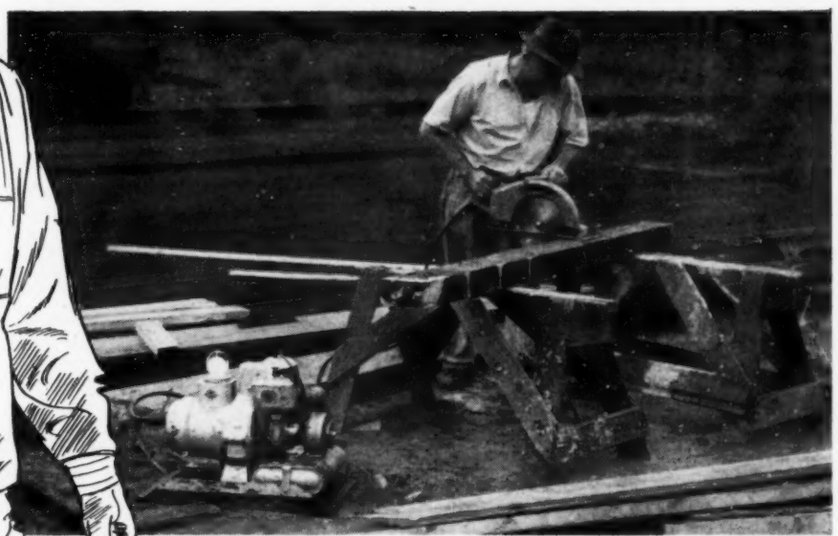
◆

Richmond, Indiana, Company Improves Service

A definite improvement in service of the Richmond (Ind.) Home Telephone Company has been reported by the Indiana Public Service Commission.

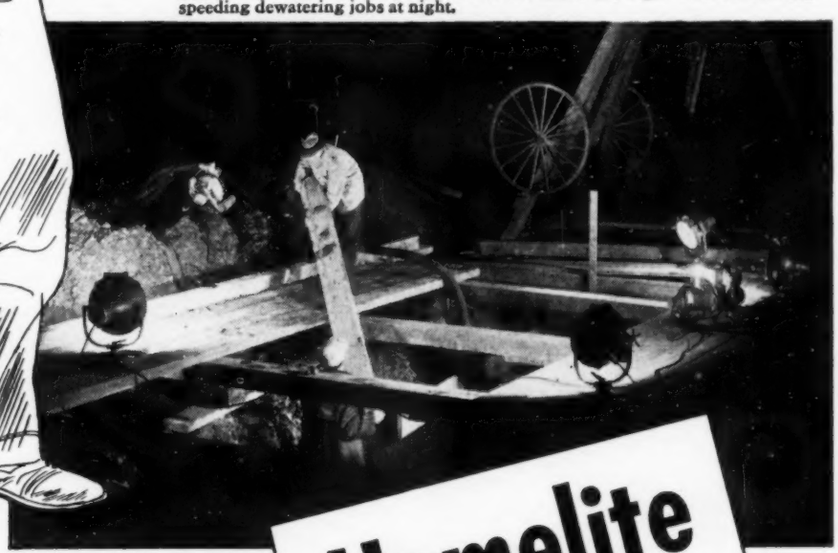
The commission report stated said that in addition to the local office improvement, the Indiana Bell Telephone Company has advised the commission that it plans additions to its lines into Richmond.

Their Performance Speaks Louder Than Words



Above — A Homelite Generator on the job furnishes plenty of power to operate time-saving electric saws.

Below — A Homelite Pump and Generator make the right combination for speeding dewatering jobs at night.



We'd much rather show you Homelite Portable Gasoline-Engine-Driven Pumps and Generators *in action* than just talk about them. Action speaks louder than words.

So why not let us give you a free demonstration . . . any place you want it. See how fast a Homelite pumps, how quickly it primes itself, how easily it handles heavy liquids and solids. See all the cost-cutting operations you can put to good use on day or night work with steady electric power furnished by a handy Homelite Generator.

To get such a demonstration, free from all obligations, simply write. We'll have our nearest representative get in touch with you.

Homelite
CORPORATION
Port Chester, New York
Portable Pumps Generators and Blowers
GASOLINE-ENGINE-DRIVEN

PRODUCTS and SUPPLIES

the New Products Showcase

New Products & Supplies of Practical Interest

Endless items of materials, tools and equipment are used in, or are useful to the telephone industry. New models appear, improvements are made in earlier designs as inventors, designers and manufacturers keep pace with the constant forward movement of the telephone industry. The same is true of any magazine that aspires to keep telephone men advised and in touch with what is going on. TELEPHONE ENGINEER AND MANAGEMENT has collected and here presents news of the latest developments in equipment, tools, materials and products. Each item, presented in our NEW PRODUCTS section warrants your close attention. If further information is desired, simply fill out the handy coupon on page 57, tell us the items on which you desire more information and our NEW PRODUCTS EDITOR will see that you receive complete details.

Hubbard Redesigns No Thimble Eye

The Hubbard & Co. engineering department, Pittsburgh, Pa., has developed a new no thimble eye known as the "HUBEYE". This eye is an improvement over the guyeye and

The "Hubeye"

Thimbleye anchor type, and will be standard from now on. The eye conforms to the Edison Electric Institute specifications and has been approved by the Rural Electrification Administration, Bell Telephone Laboratories and the Western Electric Company.

The new "Hubeye" is now in production and will be available next month. All orders now on the books for no thimble eye will be automatically changed to this new design.

◆

Hercules Fence-Master

The new Hercules Fence-Master, distributed by the Metals Division of Plastic Molded Products, Inc., Los Angeles, Calif., is an ideal combination tool for home and workshop, farms and ranches, telephone and power linemen, marine use, etc.

The Fence-Master can be used as a wire cutter, wire stretcher, wire splicer, staple puller, pair of pliers or a hammer. Weighing only 1½ pounds and being but 10¼" long, it is particularly suited for carrying in car

Fence Master

compartment, saddle bag, tool box, etc.

Made of heat treated, drop forged chrome-molybdenum steel with attractive rust-proof finish, the Fence-Master is virtually indestructible.

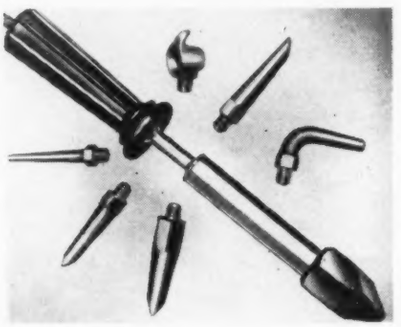
Your New Products Dept. will send prices and further details upon receipt of your request.

◆

Kwikheat Introduces 450 Watt Soldering Iron

The Kwikheat Soldering Iron—the iron with built-in thermostatic heat control—is available in both 225 Watt and 450 Watt sizes. The new 450 Watt iron has ample power for most any soldering job including sheet metal work—yet because the power is always kept under control by the patented thermostat, the same iron can be used for delicate radio work. Seven different tip styles can be interchanged on the 450 Watt iron and a new extra-heavy tip takes advantage of the full power.

One of the biggest advantages of the Kwikheat Iron is its fast heating time—only 90 seconds after plugging in it is hot, ready to use. However, because of the thermostat it can never overheat—tips last longer, need retinning less often and



Kwikheat Soldering Iron

efficient, uniform soldering is produced. The iron is extremely light for its power (25 oz. with the heaviest tip), is well-balanced and has a safe, cool Bakelite handle.

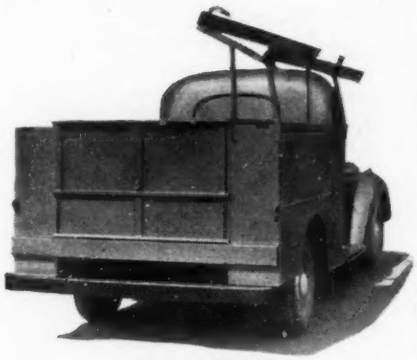
The Kwikheat Thermostatic Soldering Iron is manufactured by Sound Equipment Corporation of California.

◆

Type 4460 Bodies Win Popularity

Hundreds of Type 4460 bodies, manufactured by the American Coach & Body Company, Cleveland, Ohio, have been placed in service since the development of the original design in 1938. Since first introduced, the design has undergone constant refinement until now it is an outstanding value in light service equipment.

The design is characterized by the generous side compartments and the open bed construction. Each side box has a vertical compartment at the front and a single horizontal com-



Type 4460 Body

partment above the wheel housing. The vertical compartments are equipped with removable and adjustable shelves and the right hand horizontal compartment has adjustable bins. American Coach gravity type doors with cam type latches and sliding bar locks are a feature of the design.

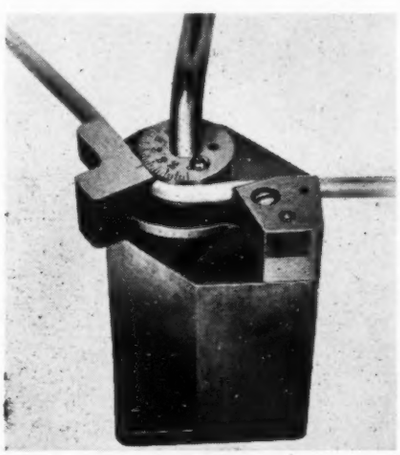
Type 4460 bodies are built in three sizes and can be mounted on almost any make of truck chassis with capacity ratings from ½ ton to 1 ton. Rear fenders are unnecessary as these are supplied as an integral part of the body. These bodies may be mounted on your truck at the factory or installed by your own mechanics.

◆

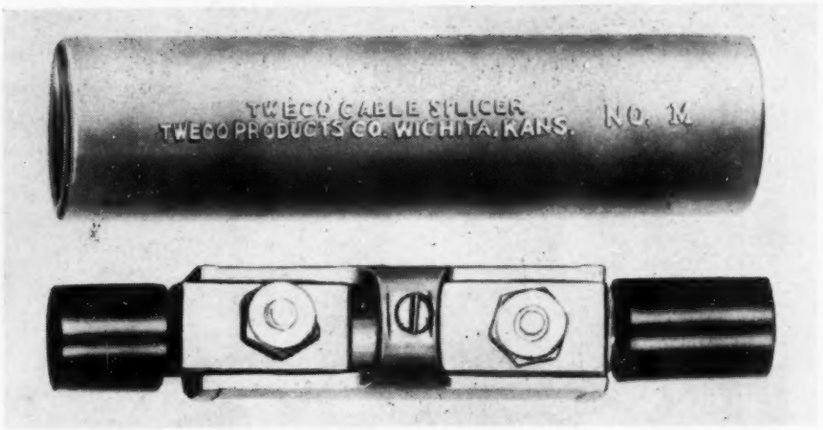
Hand-Bending Tool By Glenn Martin Co.

A new hand-bending tool, which permits all kinds of small tubing to be curved to any desired angle, has been developed at the Glenn L. Martin Company.

Designed by a Martin employee, the new tool consists of a sturdy steel base which may be used in a vise or clamped onto a bench, a revolving radius rod equipped with a handle for turning; a stop block grooved to hold the tubing; and a movable radius block which guides the tubing around a bend



Hand Bending Tool



Welding Cable Splicer

roll centered on top the base. This roll, cylindrical in shape and also grooved has a top plate scribed in 360 degrees. A measuring point is marked on the movable radius block. The radius and holding blocks and the roll are so grooved as to prevent crushing or change in section of the tubing.

Chief advantages of the new device lie in the great amount of time saved as compared to ordinary hand bending operations, the extreme accuracy to which the tubing can be turned and a material saving in that there is no scrap due to the tubing being crushed or split during the operation.

◆

Welding Cable Splicer Provides Quick Repair

A complete new line of Welding Cable Splicers has been announced by the Tweco Products Co. The new product is a companion to the quick-detachable connectors already offered by the company.

Tweco Cable Splicers provide a quick repair of broken cables or salvaging short lengths. A simple clamp cable connection on each end of the splicer, with provision to solder between the cable ends, assures an efficient connection. A fibre sleeve covers this permanent, low cost, easily installed cable splicer.

Made in three sizes to cover the full range of welding cables. Size "S" for small No. 4, 2, or 1 cables; Size "M" for medium No. 1/0 or 2/0 cables; Size "L" for large 3/0 and 4/0 cables.

◆

Safety Step Company Announces Folding Steps for Trucks

Important savings in money, time, accidents, driver fatigue, and a reduction in the number of hernia cases among truck drivers, are claims made for a new quick-acting folding step for motor trucks and trailers, manufactured by Safety Step Company.

(Please turn to page 58)

New Product's Editor,
TELEPHONE ENGINEER Publishing Corp.
7720 Sheridan Road,
Chicago 26, Illinois.

September 15, 1946

Please send me, without charge or obligation, literature on the following items

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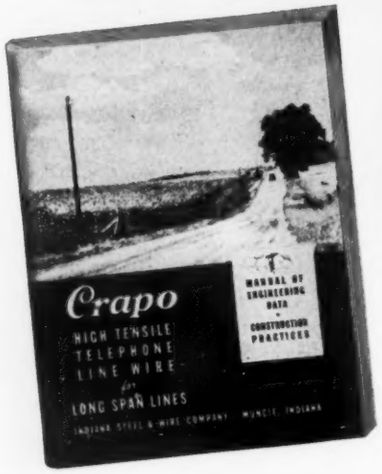
Assistance in Planning Rural Lines



Request Your Copy of New Manual Now!

Information on how to build long-span, low-cost rural lines of *Crapo* High-Tensile Telephone Line Wire is contained in this new, illustrated Manual.

Designed to assist you in extending and improving rural lines. Contents include electrical and physical characteristics of both *Crapo* HTL-135 and *Crapo* HTL-85 Line Wire; tables of stringing sags and tensions; recommended construction practices, etc.

If you have not received your copy of this manual, be sure to ask for one. Contact your distributor of *Crapo* Galvanized Wire and Strand or write direct for Manual No. 203!

Crapo HIGH-TENSILE LOW-RESISTANCE LINE WIRE

Crapo HTL-85

Crapo HTL-135

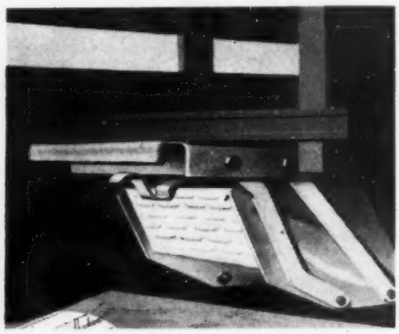
Indiana Steel & Wire Company

Muncie Indiana

Crapo HIGH-TENSILE TELEPHONE LINE WIRE

The New Products Showcase

(Continued from page 57)



Model R-1 Safety Step

The manufacturer states that the steps are engineered for use on flat racks, stake bodies, vans, trailers and semi-trailers, and are easily installed with four bolts. Model R-1 (see accompanying cut) is designed for installing on the rear of truck; it may be mounted in center or at either side. In closed position the steps are compactly folded under the truck bed. When the simple trip is manually operated, two sturdy 16-inch slip proof steps instantly swing down and lock in open position ready for use. A slight lift and push on the bottom step swings and folds them back under the truck bed where they are automatically and securely locked in closed position out of the way. Another style, Model S-16, is designed for side or "tight spot" mounting.

Body alterations are not necessary to install Saf-T-Steps. Four bolts securely mount it to the under side of the truck platform, requiring an average of about 30 minutes for the job. They are all metal and built to support a weight of 1,000 pounds. They weigh only 40 pounds.

The tread plates have an unusually secure gripping action whether the shoes are muddy, wet, icy, rubber clad, or hobnailed. They are self-cleaning and can never get full of mud or saturated with water, freeze or form hazardous foot surface.

◆

Ultra High Speed Relay

The new Stevens-Arnold MILLISEC RELAY is an hermetically sealed sensitive relay capable of speeds up to 1000 operations per second. The basic design of the moving elements is quite different from conventional relay practice and it is this new design which makes the ultra high speed possible, at the same time assuring great reliability if operated in the usual speed ranges.

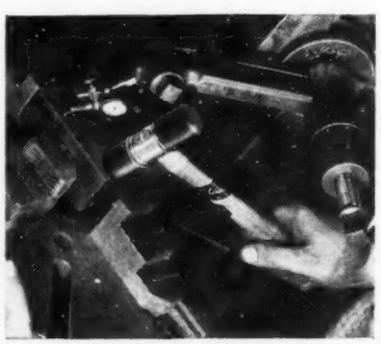
A glass envelope surrounds all the moving parts and protects them from moisture, dust or corrosive fumes. With this new type of construction, sensitivities down to ½ milli watt are possible. Ratings up to 5 amperes can be obtained. Closing time can be less than one milli second. The outside dimensions of the 115 volt AC 1 ampere rating are three inches high and one and one-half inch base diameter.

Millisec Relay

◆

New "Kant-Mar" Hammer

A new hammer for mechanics with an unbreakable "Castex" (hard plastic) double-head that will not mar flat surfaces of metal has been announced by the Schmidgall Manufacturing Co. of Peoria, Illinois. It is particularly useful on flat metal surfaces where mars, dents and blemishes on dies and fixtures must be avoided.

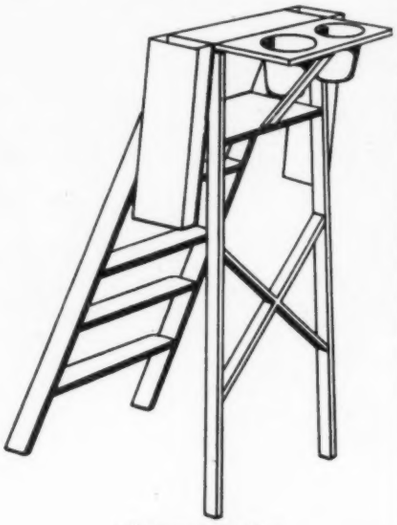


"Kant-Mar" Hammer

Of durable construction, the head is die cast, non breakable, fire proof and acid proof, of non-conducting material, and "Kant-Mar" is guaranteed for life. This practical tool is available in three sizes, and further details will be sent upon request.

Sylvania Develops All-Purpose Ladder

To maintain the high lighting levels of small flourescent installations in stores, offices and institutions, engineers of Sylvania Electric Products Inc., have developed an "all-purpose"



All-Purpose Ladder

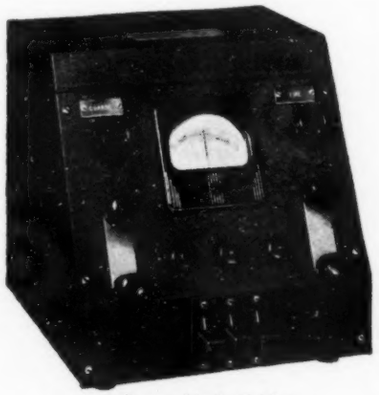
maintenance ladder, which is easy and inexpensive to build. By the addition of sheet metal or wood racks to any ladder, spaces are provided for burned-out lamps, new lamps, starters, cleaning cloths and two buckets, one for the cleaning solution and the other for rinse water.

◆

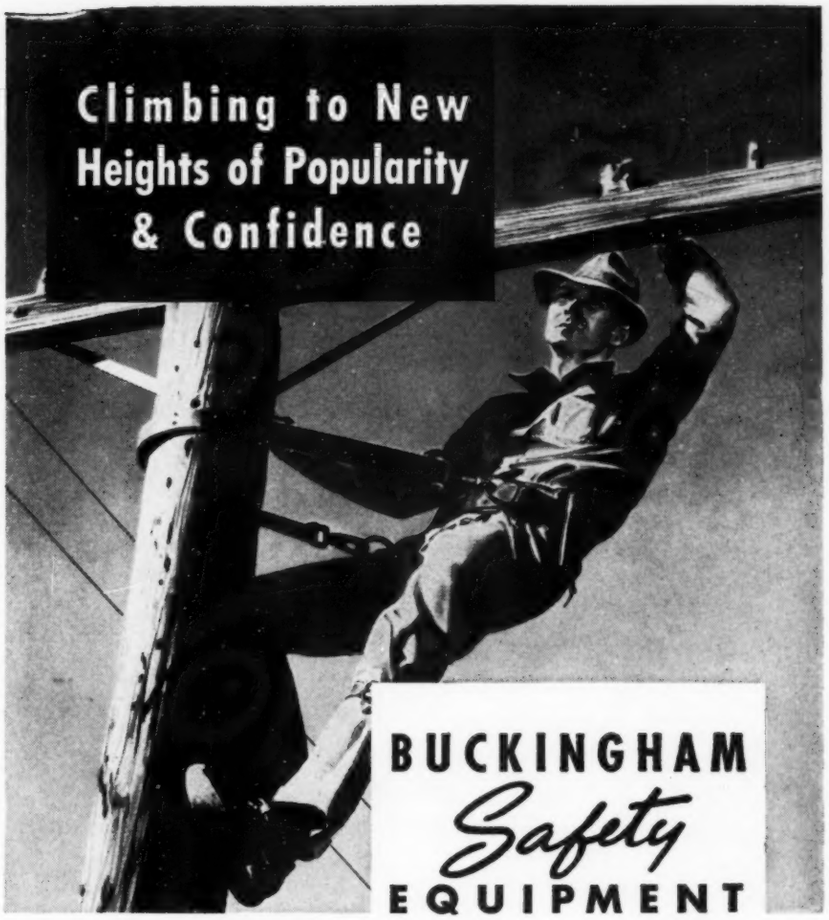
Bridge for Quick Testing Of Resistors

The new Low Range Limits Bridge, manufactured by Associated Research, Inc., is particularly adapted to testing resistance values of motor windings, transformer primaries or secondaries, rheostats, potentiometers, lamps —anything that offers ohmic resistance to flow of current.

Features include ease and flexibility of operation . . . just connect resistor



Low Range Limits Bridge



For 45 years, Buckingham safety equipment has guarded the linesman's life and limb from accident and carelessness. For 45 years, it has kept him *comfortable* as well as safe.

That's why today Buckingham equipment enjoys demand and popular confidence never before equalled in Buckingham history . . . why expanded Buckingham facilities are turning out more safety equipment than in any previous year.

Stephens Climbers

Exclusively manufactured by Buckingham for 45 years, the Stephens Climber is world-famous for its quality and safety features.

★ With production up 50% — and still going higher — opportunity for Buckingham distributors is improving every day. If you're a qualified distributor in open territory . . . if you want a reputable line upon which you can build solidly for the future . . . write today for complete details.

Buckingham Easy Belt No. 58

Safe and comfortable, it's made of tan harness leather, lined with soft chrome lace-leather. No metal contact with the body. Forged Dee-ring and buckles are individually tested.

Write for Catalogue 24 showing the complete Buckingham line.

Buckingham MANUFACTURING CO., INC.

Walter E. Craw, President **5-7 Travis Street, Binghamton, N. Y.**

PREMAX

Question:

What kind of paint should be used for pole marking?

Answer:

We would not recommend paint for this purpose. Embossed aluminum letters prove much more satisfactory. These aluminum numerals and letters are available in ½, ¾, 1, 1½, 2 3, 4 and 6-in. sizes. They are attached to the poles with two nails. —"Plant Man's Quiz", April 6th, 1946.

Obviously Premax Metal Markers!

Public Utilities the world over are adopting Fremax Stamped and Embossed Aluminum Letters and Figures and Premax Embossed Pole Tags for enduring identification. Cost less than stenciling—outlast the pole! Send for complete details.

Premax Products

Division Chisholm-Ryder Co., Inc.
4608 Highland Ave., Niagara Falls, N. Y.

and press test and limits keys for instant reading on large, clear open scale. Resistance from a fraction of an ohm to 20,000 ohms may be checked to exact tolerances. Plus and minus tolerances are separately adjustable. Model 81-A is completely self-contained, and uses 3 No. 6 dry cells. No engineer is required for setup, and the bridge does not have to be leveled or specially installed.

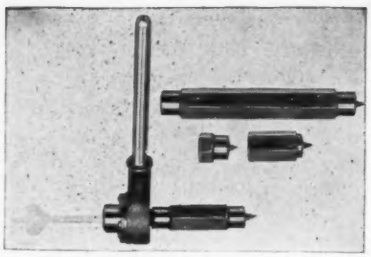
◆

New "Liberty" Ratchet Drill-Driver

Development of the New Liberty Ratchet Drill-Driver is announced by Techtmann Industries, Milwaukee, Wisconsin, national distributors—manufactured by the Liberty Tool & Machine Co.

Designed for drilling between studs and joists or restricted spaces in buildings or other structures, this tool gives positive feed at each turn of the drill bit. The compact head allows centering of holes within 1¼" of the nearest obstruction. Any standard wood bit can be used. Steel drills can be used with an adapter chuck.

The thrust of the lead screw is carried directly to the drill shank by a solid shaft. Large wearing surfaces hardened to a depth of .010" insure long service under severe conditions. If necessary, any part can be readily



Ratchet Drill Driver

replaced. The ratchet is fully enclosed in a strong, semi-steel head, providing protection against dirt. A long lead screw in combination with 1", 2" and 8" extensions allows use of the Ratchet Drill-Driver over a wide range of dimensions. In actual use, holes up to 3" diameter have been drilled without difficulty.

Although intended primarily for use on wood members, steel plates or beams can also be drilled by reducing the feed, which can be done by revolving the lead nut in the same direction as the drill.

◆

Silastic Facts No. 1A

Dow Corning Corporation has announced the availability of their booklet entitled, **"Silastic Facts No. 1A"**, which contains information about Dow Corning's Silicone Rubber.

Established uses for this exceptionally heat-stable, semi-inorganic rubber-like material as well as tables giving the physical, and electrical properties and the chemical resistance of the six Silastic stocks now available in commercial quantities are included in this comprehensive booklet. When properly cured these Silastic stocks have rubber-like properties which are not appreciably changed by temperatures up to 500° F. Some of them do not stiffen at temperatures as low as -70°F.

Silastic is, therefore, recommended for many applications where articles made from conventional rubbers deteriorate rapidly because of heat or weathering. It also permits simplifications in the design of equipment and installations which have of necessity been complicated by the limited heat and cold resistance of elastic materials previously available.

◆

New Booklet Available

Automatic Temperature Control Co., of Philadelphia, Pa., presents a new bulletin, in color and well illustrated, concerning their special built time switches for the volume user. The booklet, which gives information and detailed description of the time switches made by the company, can be obtained by dropping a postal to your New Products Editor.

Play Safe!

Working aloft in all kinds of weather, the telephone lineman deserves the safest equipment that money can buy. Give him confidence in his own safety, by providing him with belts, straps and climbers made by KLEIN—producers of fine linemen's tools since 1857. Telephone men everywhere recognize this name as a synonym for complete reliability—so, for safety's sake, always

Specify **KLEIN**

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HOW TO BE SURE OF

INDUSTRIAL CONTROLS

You can't complete nor can you ship electrically operated equipment without controls.

There are several precautions you can take to assure having proper controls when needed. First is to deal with a dependable source of supply. Then make your selection from as near stock units as possible to avoid special operations and order at the earliest possible date.

As a leading producer of Electric Controls, Ward Leonard fully appreciates the manufacturer's problem and is doing a remarkable job in the face of present day problems. The line is broad, thus offers wide selection. Engineering Service works in the customer's interest. Production is maintaining the highest possible standards.

There is no better source of supply for Electric Controls, than Ward Leonard.

Bulletins are available describing Ward Leonard Relays, Resistors, Rheostats and Motor Controls. Send for the bulletins of interest to you.

WARD LEONARD
RELAYS • RESISTORS • RHEOSTATS
Electric control devices since 1892

WARD LEONARD ELECTRIC COMPANY
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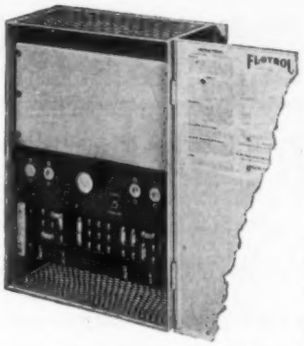
FLOTROL
THE IDEAL BATTERY CHARGER

FOR ALL APPLICATIONS REQUIRING A DEPENDABLE SOURCE OF CONSTANT VOLTAGE DIRECT CURRENT



FLOTROL DOES EVERYTHING WITH 3 SIMPLE ELEMENTS AND NO MOVING OR EXPENDABLE PARTS

IT...

Compensates for variations in input voltage • Compensates for variation in loads • Delivers constant voltage to battery • Is entirely automatic • Is self-protecting on overloads • Delivers constant trickle charge at all times • Artificially cools rectifiers without moving parts.

The dual range FLOTROL chargers provide for operation on any one of five different input voltage ranges: 95-115V., 105-125V., 190-230 V., 200-240 V., and 210-250 V.

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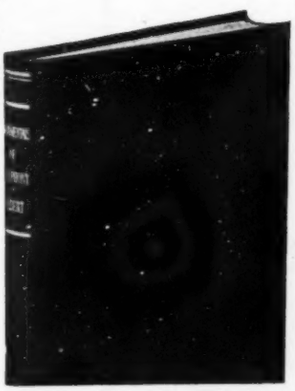
DESIGNERS AND MANUFACTURERS OF SUB-CYCLE

A Simple, Up-to-the-minute Guide to Telephone Fundamentals

to give you the groundwork you need for best results in practical work



This first new telephone book in years tells how modern telephone systems operate, giving the electrical theory and the technical information on equipment and circuits that will be most helpful as a foundation for the non-engineering worker in telephone installing, servicing, etc.

FUNDAMENTALS OF TELEPHONY

374 pages, 5½ x 8½, 200 illustrations, $3.75

This book provides the telephone worker with an understandable treatment of the technical aspects of his work, valuable as a key to better results and improved skill in any job he may undertake. The fundamentals of electricity and acoustics are covered, followed by a full elementary treatment of telephone equipment and circuits, their elements, characteristics, functions, etc., illustrated by many numerical examples.

Order direct from

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INVEST YOUR "PIN MONEY" IN THE BEST

LOCUST PINS

Locust wood is practically impervious to decay and is impenetrable to moisture. Because of its close-grained hardness locust can be machined into strong, long lasting pins of standard specifications that can be counted on to retain their size and shape.

OAK BRACKETS

Ook pole brackets of unquestioned quality are in demand now as never before in the face of the qualifications necessary in the equipment and materials needed today to "keep 'em talking." Present day maintenance and repair have every reason to demand and get only the best.

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Research and experiment have produced in Hemingray insulators a glass insulator that is better than any ever before offered.

Non-porous, non-deterotorating, uniform coefficient of expansion and high mechanical as well as high dielectric strength are some of the many qualities that rank Hemingray the "best on the line."

BUCKEYE TELEPHONE and SUPPLY CO.
COLUMBUS 6, OHIO

SERVICE!

Yes! Years more service with

TELEPRENE* DROPWIRE

You can get added years of GOOD SERVICE at this vulnerable point in your plant by specifying Teleprene Drop Wire.

Teleprene is jacketed with Neoprene which is highly resistant to sunlight and weathering, abrasion and wear, high voltage, acid and chemicals, heat and flame.

The difference in cost. per drop. is **PENNIES,**
The difference in Life is **YEARS**

For other outstanding features of Teleprene see our bulletin *"The Story of Teleprene Drop Wire"*

TELEPRENE; the DROP WIRE with the NEOPRENE Outer Jacket

Prices, delivery and samples obtainable through your nearest GraybaR Office

Order Teleprene by WHITNEY BLAKE Catalogue No.

17TBP-R	Reinforced Parallel
17TBP	Parallel
17TB2-R	Reinforced Twisted Pair
17TB2	Twisted Pair

** Reg. Applied for, U.S. Pat. Office*

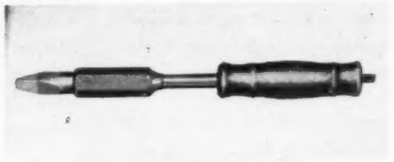
Distributed by GraybaR ELECTRIC COMPANY

WB

THE WHITNEY BLAKE CO.
New Haven, Conn.
Well Built wires since 1899

Hexacon 32 Volt Soldering Irons

Hexacon Electric Co., 124 W. Clay Ave., Rosell Park, N. J., presents this new line of 32 volt soldering irons for use on farm or home generating systems. The new irons incorporate all standard Hexacon features including replaceable elements and tips, heating elements housed in damage proof, hexagonal barrels which permit vise clamping for easy tip removal and 6



Hexacon Soldering Iron

feet heater cord of unusual flexibility and durability. The shatter-proof plug is live rubber type. Screw tip irons range from 90 watts with ½" tip to 500 watts with 1⅝" tip; plug tip irons range from 100 watts with ⅜" tip to 550 watts with 1⅛" tip.

Every iron listed is subjected to twice the insulation breakdown required by Underwriters Laboratories, and all Hexacon irons are listed as standard by the Underwriters.

For further information about this new 32 volt iron, or literature concerning the Hexacon P-150 iron, write your New Products Editor.

◆

Whitney Blake Company Makes New Plastic Wire

The Whitney Blake Co., Hamden, Conn., pioneers in the manufacture of heavy rubber insulated wire and cables used in communication systems, is the maker of a plastite wire being used for the broadcasting system installation at the new United Nations home on the former scene of the World's Fair, Flushing Meadow, Long Island, and at new quarters of the Security Council, Nassau, Long Island.

The wire, a plastite insulated product with braided copper shield, is being delivered as fast as sufficient quantities of it are accumulated at the company's plant. Practically six miles of the cable were used at Hunter College by the Langevin Co., New York City, in the erection of 24 broadcasting positions, which included individual microphones for each delegate to the Security Council of the United Nations, as well as extra broadcasting facilities for the radio announcers.

One of the difficulties to be overcome in filling orders of this kind, according to B. R. Hubbard, technical co-ordinator at the Whitney Blake plant and designer of the plastite wire, is the lack of materials. He said that

in view of the limited time for delivery of such orders, it is only by skillful use of materials on hand that the company is able to meet the situation.

The design for the wire was first devised by Mr. Hubbard last spring, when the Hamden firm was suddenly called upon by the Langevin company to furnish cable for the audio facilities used at Hunter College where the United Nations is now holding its sessions. Through the combination of Yankee genius and concentrated effort of the company's employes, a 10-weeks' job was completed, at that time, in 10 days.

◆

New Lorain Booklet Describes "Flotrol" Charger

The Lorain (Ohio) Products Company have prepared an especially interesting descriptive book on its new battery charger "FLOTROL". This book can be secured by writing direct to the company or addressing this publication.

Some of the special features claimed by "Lorain" for FLOTROL, that assure high efficiency of operation, are: (1) It is an automatic constant voltage battery charger which operates entirely without moving parts; (2) entirely automatic FLOTROL delivers correct trickle charge at all times, and does not use motors, marginal relays, time display devices, biased reactors, D.C. stabilizers, reference voltage cells, voltage regulator tubes, or other expendable parts, and (3) the charger is exceedingly simple in construction. Basically, it consists of an electrical phase-splitting transformer and a dry disc rectifier.

One feature of FLOTROL that is given special emphasis by the manufacturer is "Induced Ventilation Without Moving Parts". This induced ventilation, which is a highly desirable feature, is obtained through a unique cabinet design.

The manufacturer claims that while FLOTROL is comparatively new on the open market, it has had over two years of thorough testing, both in the field and laboratory, and that all claims made for it can be definitely substantiated.

◆

Develops New Organic Soft Solder Liquid Flux

A new organic soft solder liquid flux, Superior No. 30, which reportedly is more effective than common rosin fluxes and which does not normally leave a corrosive residue on the work, is being made by the Superior Flux Co., Cleveland. A complete ab-

(Please turn to page 66)

TRUCKS and TOOLS

for line construction and maintenance

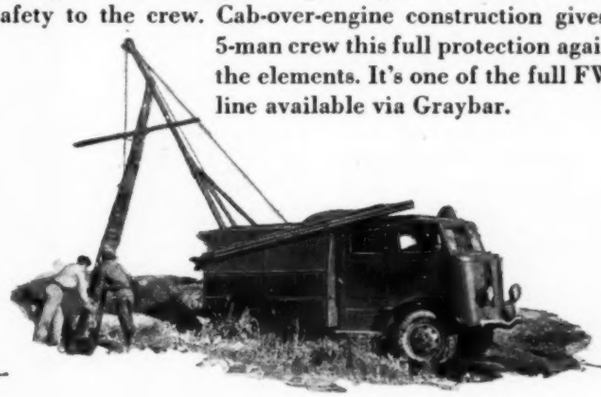
Graybar supplies everything from pliers to completely equipped construction trucks. Peavies and pike poles — tapes, tree trimmers, tamping bars — shovels, hole spoons, loys, crowbars, climbers, wire cutters, splicing clamps, hoists, rope . . . these and all other tools your linemen need are obtainable via Graybar, through representatives with a specialized knowledge of telephone needs and standards.

On many standard items, delivery from our near-by warehouse saves time. Call our nearest office. *Graybar Electric Company, Graybar Building, New York 17, N. Y.*

4620

NEW FWD'S ADD SPEED AND SAFETY TO CONSTRUCTION AND MAINTENANCE

The derrick and power-driven winch on this new FWD unit speed the raising of telephone poles and afford added safety to the crew. Cab-over-engine construction gives a 5-man crew this full protection against the elements. It's one of the full FWD line available via Graybar.



via Graybar

IN OVER 90 PRINCIPAL CITIES

Personalities IN THE NEWS

Cliff Pearce, popular president of the Northeastern Iowa Telephone Group and progressive manager of the Farmers' Telephone Company, Riceville, Iowa, is justly proud of the new dial installation at his exchange in New Haven.

By rebuilding the entire plant, replacing telephones of the type that were used 40 years ago with new handsets of the latest type, building a new building, new cable plant and installing dial central office equipment, the exchange is now 100% new from start to finish and **Cliff's** surbscribers are well pleased.

◆

Joe L. Zieg, manager of the Southern Continental Telephone Co., Campbellsville, Kentucky, has returned to Campbellsville as district manager, after four and one-half years as district manager at Somerset.

The office has been vacant since the resignation of Gilbert Lewis in February and since that time has been under the supervision of Mr. Zieg. His district includes besides Campbellsville, Columbia, Greensburg, Lebanon, Mannsville, Bradfordsville, Loretto, Russell Springs and Houstonville.

Mr. Zieg is succeeded at Somerset by W. R. Bacon, Glasgow.

◆

O. M. Pointer, former district plant supervisor of the Southwestern States Telephone Company, Henderson, Texas, has been transferred to the genral offices at Brownwood as maintenance supervisor of the plant department.

◆

F. H. Edminster has been appointed manager of the Central Telephone Company's exchanges in Slayton, Lake Wilson, Balaton, Currie and Iona, Minnesota, to succeed **K. L. Rasmus** who has been advanced to district manager.

Mr. Edminster, a veteran Central Telephone Company employe with 17 years' service, has been purchasing agent for the Sioux Falls, South Dakota, division.

Kenneth Onweiler, of Butler, Mo., has been named manager of the King City, Mo., exchange of the United Telephone Company, succeeding **Max Sheneman** who has been transferred to Weston, Mo.

◆

William D. Sadler, former installer and maintenance man of the United Telephone Company, Union City, Indiana, has been promoted to manager of the Union City exchange succeeding **J. R. Meredith** who has been appointed district manager at Knox, Indiana.

◆

Walter Schrupp, former district manager for the Central Telephone Company, Slayton, Minnesota, has been promoted to assistant manager of the new Central division comprising several states with headquarters in Sioux Falls, South Dakota.

Charles W. Chastain, Plattsburgh, Missouri, has been promoted to commercial manager for the properties of the Middle States Telephone Company in Clinton and Andrew Counties, Missouri. Mr. Chastain replaces **C. F. Parks** who is now associated with the Gulf States Telephone Co., Tyler, Texas.

◆

George Eck, Des Plaines, Illinois, former plant superintendent of the Middle States Telephone Company, is now manager of the Electronic Maintenance Company of Chicago and technical advisor of the Executone Company of Chicago. Mr. Eck now is established in the electronic field, specializing in interoffice communications and loud voice paging systems and any inquiries from his friends in the telephone industry will be given his prompt attention through the engineering and technical staff of the company.

General Courtney H. Hodges, Commander of the First Army, U.S.A., presenting a War Department Certificate of Appreciation to Carl Whitmore, president of the New York Telephone Company, before several hundred employees assembled August 19 in the lobby of the company's headquarters building, 140 West Street, New York City.

Subscribers Approve Rate Boost for Paoli, Ind.

Eighty-five per cent of the Paoli, Indiana, subscribers of the Indiana Telephone Corporation, Seymour, prefer a higher rate to the present service.

A petition signed by subscribers has been prepared for presentation to the Indiana Public Service Commission as the first step toward installing a modern dial system. The petition provides for an approximate 25 to 50 per cent increase in rates, to be effective when the automatic system is placed in effect.

A Meridian Club civic affairs committee conducting a canvass of the community secured 304 signatures out of 323 subscribers. Only two refusals to sign were encountered.

E. S. Welch and W. J. Scheidler, vice-presidents of the Indiana Telephone Corporation visited Paoli to set in motion their plans to modernize Paoli's telephone system. Plans provide for a $25,000 building, with total improvements amounting to about $75,000.

◆

Modern Telephone Service For UN Headquarters

A nine-position dial switchboard serving 1,000 or more telephones was put into operation August 19 at the United Nations headquarters, Lake Success, Long Island. Nearly 100 trunk lines connect the UN switchboard to the telephone central office and more will be added to make a maximum of 150 lines.

UN facilities will also include a six-position key turret in the Information Bureau. Newspapers and press associations will receive direct service from the central office of the New York Telephone Company, and 25 teletypewriters have also been provided.

Telephone service at UN headquarters is supplemented by 10 unattended public telephones and 20 coin stations for press and public use. In addition, for news dissemination, a 20-station teletype network terminating in offices of newspapers and press associations has been installed. Sending machines will be located both at Lake Success and Flushing Meadow Park.

◆

New Board for Amor, Minn.

The Amor-Dead Lake & Main Star Lake Telephone Company, Amor, Minnesota recently purchased the switchboard of the Vergas (Minn.) Telephone Company. The switchboard will be installed at the Amor exchange.

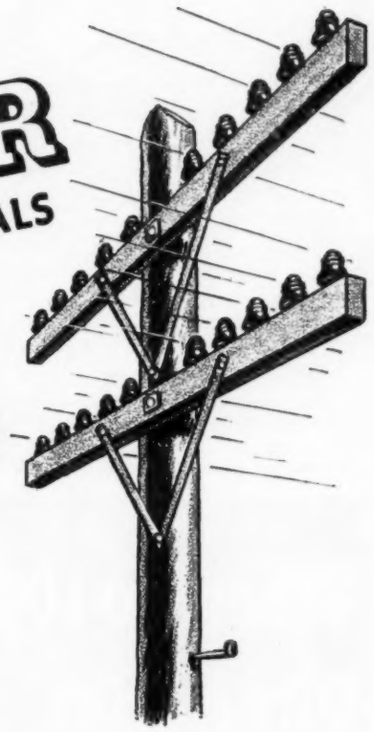
It's

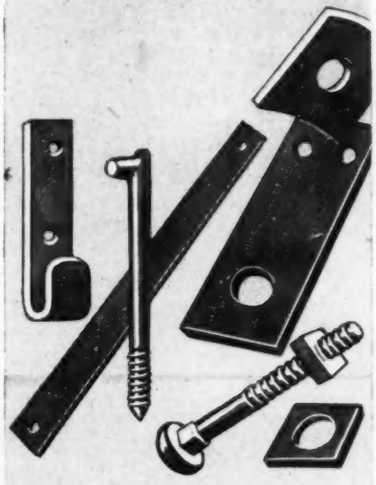
OLIVER

POLE LINE MATERIALS

for

STAYING POWER THAT PAYS





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PRODUCTS INCLUDE

ANCHOR and GROUND RODS
BOLTS BRACES
HOUSE and POLE BRACKETS
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CABLE GUARDS and STRAPS
CABLE SUSPENSION CLAMPS
GUY WIRE PROTECTORS
LAG SCREWS POLE STEPS
STEEL PINS
WASHERS (Round and Square)

—and other Hardware for Telephone Line Construction

Telephone men want hardware they can depend on . . . hardware that cuts down on replacement costs . . . saves on labor and labor costs . . . stresses quality and staying power.

No wonder so many linemen are "lining up" with Oliver products in the construction of new lines or for the replacement of old line hardware. Oliver quality goes all the way to keep service uninterrupted.

For staying power that pays, "Line Up" with Oliver hardware now.

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET · CHICAGO, ILLINOIS

New Products Showcase

(Concluded from page 63)

sence of injurious deposit at the joint leaving a residue that is noncorrosive, nonconductive, nonhygroscopic and coluble in water, is claimed.

It is recommended for applications where rosin-alcohol is unsatisfactory or where strong acid fluxes cannot be used because of the corrosion factor. It may be used in soldering copper, steel, silver, brass alloys and electroplated parts. The composition was developed by the Battelle Memorial Institute.

Buda Company Announces New Jack

The Buda Company has announced the addition of 50-ton hydraulic journal jacks to their line of jacks.

Buda's two-speed hydraulic jacks have two distinct speeds, a fast speed for quickly raising light or medium-heavy loads; normal or standard speed for raising capacity loads. The raising of loads is by easy pumping action. Lowering of loads is regulated by a simple control valve—making the loads under complete control of the operator. Loads may be held indefinitely at any height.

Buda Models 50-B-2 and 50-B-26 hydraulic jacks are 50-ton jacks designed especially for general high lifting jobs. They are used a great deal in railroad repair shops, for bridge work and for extremely heavy general industrial lifting. Model 50-B-12 has a height closed of 12", a rise of 7" and weight of 120 pounds; Model 50-B-26 has a height closed of 26", a rise of 20" and a weight of 200 pounds.

◆

Gray Audograph Wins Business Acceptance

New to the business world but a well known favorite of the Army and Navy, today's Gray Audograph, manufactured by The Gray Manufacturing Company, Hartford, Connecticut, owes its ruggedness and simplicity to companion equipments designed to meet rigid military requirements.

The Gray Audograph records on plastic Flexograph discs, that are paper-thin and unbreakable. The discs come in three sizes: 5¾-inch size provides 10 minutes on each side, 6½-inch, 16 minutes on each side, and the 8½-inch disc gives 31 minutes on each side. One record in the largest size contains nearly 14,000 words, which is equivalent to 28 typewritten pages.

As an executive assistant the Audograph is ready at a second's notice to record the thoughts of its user. The desk microphone was designed by telephone engineers who have used their knowledge to make it unnecessary for the Audograph user to shout or change his natural speaking voice.

The machine takes up no more space than a letterhead and is so light that it can be easily tucked under the arm.

An interesting booklet describing the Audograph may be obtained by writing TELEPHONE ENGINEER'S New Product's Editor.

◆

Vise Forms Wire Rope Loops In One Operation

The Nunn Manufacturing Company of Evanston, Illinois is now in production on a new vise which forms a loop in wire rope by simply turning one hex nut with an ordinary wrench. The vise automatically compensates for rope sizes within its designed range and holds the loop firmly through the splicing or clamping operations.

Cabl-Vise is equipped with a swivel base that accommodates the vise in either vertical or horizontal position and rotates through 360 degrees, clamping firmly in any desired direction.

When Do 1,000 Directories

Equal 2,000 ?

When advertising accounts and sales volume double. It's not magic or figure-juggling, it's the know-how of 23 years directory advertising sales experience, plus a record of $28,000,000 in advertising sold for our clients.

If you are interested in larger advertising revenue from your directory, Wesley H. Loomis, Jr., President, and Roland T. Beard, Vice-President, Gettle Bldg., Ft. Wayne, Indiana, cordially invite your inquiry.

Loomis ADVERTISING COMPANY

502 Gettle Bldg., Ft. Wayne 2, Ind.
506 Olive St., St. Louis 1, Mo. 20 West 9th St. Bldg., Kansas City 6, Mo.
6908 Market St., Upper Darby (Phila.) Pa.; Omaha Nat'l Bank Bldg., Omaha 2, Neb.

Graham K. McCorkle Elected Illinois Bell President

Graham K. McCorkle, who got his start in the telephone business as an office boy and boy night operator in a small Kentucky town at the age of 15, was elected president of the Illinois Bell Telephone Company at a meeting of the board of directors August 28. He will succeed Aubrey H. Mellinger, president since 1938, who retires on October 1 under the company's automatic retirement plan.

W. V. Kahler G. H. McCorkle

Promotion of three other men who came up through the telephone organization also was announced. The board of directors elected William V. Kahler vice president in charge of operation, to succeed Mr. McCorkle, and Hale Nelson, who had been general information manager, as vice president in charge of public relations. Blaine Cummings, who had been chief engineer for the company's Chicago Area, was appointed general manager for State Area, succeeding Mr. Kahler.

H. Nelson B. Cummings

Mr. McCorkle began his Bell System career in 1902 at Eminence, Ky., his birthplace, where, after a period as office boy and boy night operator for the Cumberland Telephone & Telegraph Company at $20 a month, he worked as groundman, lineman and trouble shooter. He resigned in 1904 to attend the University of Kentucky, and during a summer vacation worked in the Western Electric Company's shops in Chicago, wiring switchboards.

Mr. McCorkle joined the Illinois Bell in 1908 as an evening student traffic manager. He served successively as assistant traffic manager, traffic manager, division traffic supervisor and assistant traffic superintendent, becoming general supervisor of traffic in 1920. Four years later he was transferred to the American Telephone & Telegraph Company's Department of Operation and Engineering in New York, where he handled traffic results analysis and provisional estimate matters. Later he handled toll service and supervisory matters, and in 1927 was appointed traffic results engineer.

In December, 1927, Mr. McCorkle became general commercial manager of the Chesapeake & Potomac Telephone Companies in Washington, D. C., and in 1929, general manager for the state of Maryland. In 1930 he returned to the Illinois Bell as vice president in charge of public relations. He was elected a director of the company in 1936, and later that year his duties were enlarged to include the department of personnel. He became operating vice president last May.

◆

Talk-Saver!

Time spent in talking long distance decreased 52 per cent after each officer at an Army Service Forces Headquarters found a certain gadget on his desk. It was a three-minute version of the hour-glass ordinarily used for timing eggs.

Reduce Line Clearing Costs with Seymour Smith TELEPHONE PRUNERS

This powerful pruner cuts closer, is stronger than any other similar tool on the market. Can be operated in close tangled growth; cutting easily and cleanly branches up to 1½" in diameter. No trouble with spring breakage.

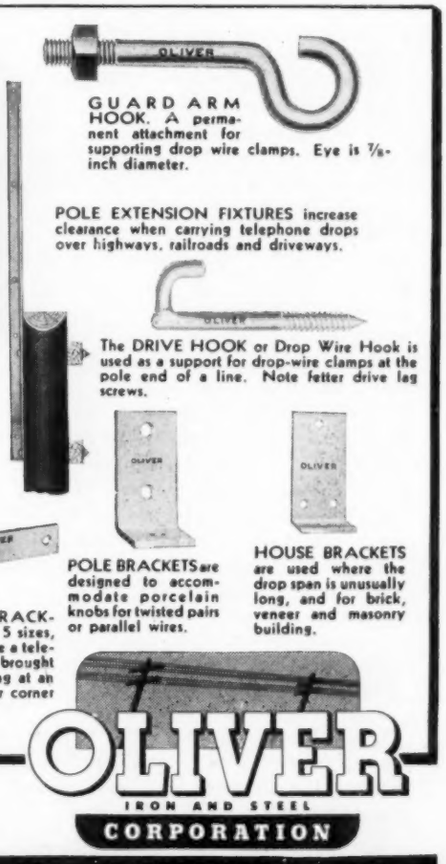
Here is the only pruner with the famous Seymour Smith "Center Cut" construction; safety catch to lock blade closed; one piece tempered tool steel blade; reinforced hook; extra long life spring; ball bearing pulley; highest quality chain; unbreakable iron head.

Designed by experts for experts; demanded by public utility companies everywhere, it will pay you to write for literature and prices.

SEYMOUR SMITH & SON, Inc.
901C Main Street
OAKVILLE, CONNECTICUT

Specially Designed for SERVICE TAKE-OFFS

From the complete line of Oliver Pole Line Materials, the items illustrated here represent typical products suitable for service take-offs. These and other items are made in various sizes and styles where the application requires. All are formed from new open-hearth steel and are hot dip galvanized.



GUARD ARM HOOK. A permanent attachment for supporting drop wire clamps. Eye is ⅞-inch diameter.

POLE EXTENSION FIXTURES increase clearance when carrying telephone drops over highways, railroads and driveways.

The DRIVE HOOK or Drop Wire Hook is used as a support for drop-wire clamps at the pole end of a line. Note fetter drive lag screws.

POLE BRACKETS are designed to accommodate porcelain knobs for twisted pairs or parallel wires.

HOUSE BRACKETS are used where the drop span is unusually long, and for brick, veneer and masonry building.

CORNER BRACKETS, made in 5 sizes, are used where a telephone drop is brought to the building at an angle, and for corner installations.

OLIVER IRON AND STEEL CORPORATION

SOUTH TENTH & MURIEL STS. · PITTSBURGH 3, PA.

EDITED BY J. S. REED JR.

Line AND Desk

Q. We notice that many types of cable terminals have their core boxes filled with asphalt compound, while certain other types do not. It is quite a difficult matter to repair recovered terminals that have filled core boxes as the compound must be first melted out. Can we safely discontinue our practice of filling terminal core boxes?

A. That would depend on the type of cable terminals you have. Old style terminals have wood face plates which tend to warp and shrink on exposure to the elements; hence the necessity for filling the core boxes of such terminals with asphalt compound to prevent entrance of moisture into the terminal. Present day filled terminals are equipped with bakelite face plates tightly sealed in place by means of cemented rubber gaskets. Since bakelite is unaffected by temperature changes and does not absorb moisture. such terminals should remain relatively weather-tight for long periods of time even without the filling. To support our contention, there is the experience of a certain large telephone company that was unable to obtain asphalt compound during the war and was forced to repair its recovered cable terminals without filling the core boxes. For the past two years this company has had no cases of trouble traceable to the lack of sealing compound. If your cable terminals are of relatively modern design, you may try repairing a number of terminals without refilling the core boxes and keep a record of these terminals on which to base your decision. Be sure that you first boil out the conductors of the cable stub in splicing oil and protect the conductors from contact with the core box slides by means of a fiber sheet cut to shape.

Q. Will you give us some pointers that will assist a telephone installer in locating the entrance in a building for a drop wire?

A. The installer should exercise reasonally good judgment in locating the entrance for the drop wire lead. The following points will be found helpful in this respect:

1. The drop wire run outside the building from the first point of attachment should be made as short as practicable.
2. The run inside the building from the entrance to the station protector should be as short as possible.
3. In general, entrances should not be made in building fronts, but at the side or back as required by the location of the wire run outside and the station protector inside.
4. When an outside protector is to be installed and the telephone instrument can be placed on the inside of the building wall, the entrance should be made as near as possible to the instrument consistent with the satisfactory location of the protector and ground.
5. In the case of stone or brick houses, where the basement ceiling level cannot be readily determined, a careful survey of the basement from the inside and outside should be made. Where necessary, careful measurements should be taken to accurately locate the point of entrance. The position of the basement windows will generally assist in locating the level of the basement ceiling from the outside. In this connection, the grade entrance of the house should not be relied upon for determining the ceiling level, since this varies with relation to the threshhold of the grade entrance in different buildings.

Q. What is meant by the influence and susceptiveness factors as applied to situations of inductive interference?

A. The influence factor relates to the ability of a power line to induce noise currents in the paralleling telephone line, while the susceptiveness factor concerns the readiness with which a telephone line picks up noise resulting from inductive or capacitive effects of alternating current flowing on a nearby power line. Power lines supplied by generators with poor wave form, or having overloaded or badly designed transformers or unbalanced phases possess a high influence factor. Telephone lines with a high susceptiveness factor are those not properly transposed, or having high resistance splices, tree leaks, or grounds that upset the line balance.

Q. It is proper to cut the ends off iron tie wires after tying the line wire in place on its insulator?

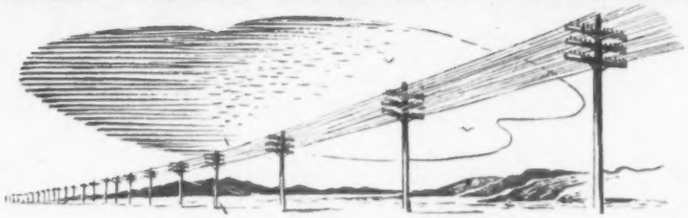
A. Although this is a common practice with many companies, we do not think the tie wires on iron line wires should have the ends cut off close to the wire since this method makes it exceedingly difficult to loosen the tie wire in case it is desired for any reason to take the line wire off the insulator at a later date. Generally, the tie wires should be just long enough (about 10 inches) to form a horseshoe tie with not more than two turns on each side of the insulator. This leaves about two inches of free end on each side of the insulator which should be bent back so that the points of the tie wire do not quite enter the insulator groove, leaving them out of the way of the man working on the pole. To insure a permanently tight tie, cinch the last quarter turn of the wire with pliers.

Q. What tools are considered essential for digging pole holes?

A. Tools commonly used for digging pole holes are the following:

1. Eight-ft. long handle straight shovel for digging the holes.
2. Digging spoon for removing dirt from the holes.
3. Frost bar for working in hard or frosted soil.
4. Round-point shovel for shoveling dirt in around pole after pole has been placed.
5. Iron-shod tamp for tamping dirt around pole.

NEED MORE CIRCUIT CAPACITY?



You Can Get from
1 to 18 EXTRA CHANNELS
ON EXISTING TELEPHONE LINES
...with Federal Carrier Systems

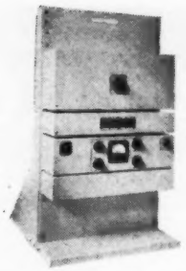
Federal's complete line of Carrier Telephone Systems offers you 5 ways to increase circuit capacity, without the expense and delay of new line construction.

Each type of carrier has been engineered for a particular type of service—but all are of Federal quality in every detail. That means FTR *features:* Hermetically-sealed units, compact construction, flexibility of operation, ease of installation, and above all—service-proved dependability, backed by Federal's 37 years of experience in designing and manufacturing superior telephone and electronic equipment.

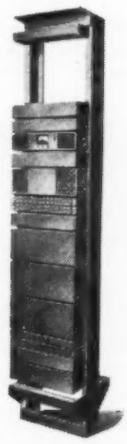
AVAILABLE NOW!

Federal's expanded manufacturing facilities have boosted production so that prompt shipments can be made. For complete information, write to Dept. H549.

SEE FEDERAL'S EXHIBIT of this equipment at the U. S. Independent Telephone Association Convention, Stevens Hotel, Chicago, on October 14, 15 and 16.

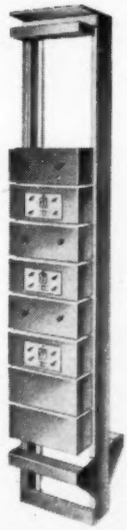


FTR 9-A-1
Single-Channel Carrier
Gives one additional speech channel over existing open-wire lines. Normal range—up to 300 miles without repeaters.



FTR 9-B-1
Three-Channel Carrier
Gives three additional speech channels over existing open-wire lines. Normal range — up to 200 miles without repeaters.

FTR 9-C-1
Speech-Plus-Duplex Telegraph Carrier
Gives duplex teleprinter channel over telephone or radio circuit (two over carrier telephone channel) retaining speech facilities — up to 100 words per minute — distortion minimized by frequency modulation.



FTR 9-E-1
Multi-Channel Carrier
Provides from 1 to 18 voice-frequency telegraph channels — up to 100 words a minute — over telephone facilities.

FTR 9-F-1
Single-Channel Carrier
Second Story
Physically and operatively similar to 9-A-1 but operates at higher frequencies. Occupies spectrum above normal single channel systems. Normal range up to 200 miles without repeaters.

Federal Telephone and Radio Corporation

In Canada:—Federal Electric Manufacturing Company, Ltd., Montreal
Export Distributor:—International Standard Electric Corporation, 67 Broad St., N. Y. C.

An IT&T Associate — FTR — Federal Telephone & Radio

Newark 1, New Jersey

Breaking ground for Sylvania Electric's new plant for the assembly of home radio receivers at Riverside, California.

Sylvania Subsidiary To Have New Plant

Sylvania Electric Products, Inc., have begun the construction of an entirely new plant for the assembly of home radio receivers at Riverside, California, for their wholly owned subsidiary, the Colonial Radio Corporation of Buffalo, New York. The first shovel full of dirt was removed from the Colonial property by Mayor Walter C. Davidson of Riverside and guests at the ground-breaking ceremony, in addition to Mayor Davidson included E. C. Culliton, George Field, W. J. Rashleigh and W. G. Patterson of Sylvania Electric and R. B. Hampson, president of the Riverside Chamber of Commerce.

E. C. Culliton, plant engineer for Colonial Radio said that the new Riverside Plant will operate as a unit for the assembly of home radios for west coast distribution. It will extend and supplement Colonial's radio set production facilities now in operation in plants in Buffalo, New York and Bloomington, Illinois.

◆

Stromberg-Carlson Ups Peacetime Production

Peacetime radio production of Stromberg Carlson reached an all time high during June, according to Vice-President and General Manager Lee McCanne. He said that average daily production in July had surpassed the June average, but that an 11-day vacation period in July had cut into the total output. Resumption of accelerated production schedules in August indicates that August output will top June figures.

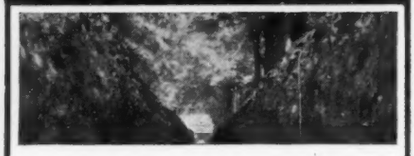
Despite early 1946 strikes in suppliers' plants and a resulting shortage of parts, Stromberg-Carlson radio production has already eclipsed the best prewar year, Mr. McCanne said. Orders already booked will require capacity production extending well into 1947.

The telephone division of the Carlson Road communications firm parallels the radio division in expanded turnout, likewise setting new peacetime records, Mr. McCanne noted. The company's sound equipment division promises to reach its production quotas set for it in January in the near future.

SINCE 1889

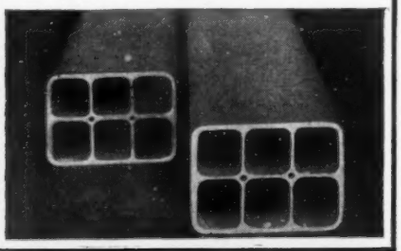
NATCO

CLAY CONDUIT



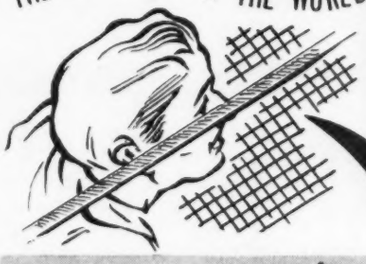
The proved and standard Protection for Underground Telephone Cables.

Cheapest in the long run. Highest quality and a full line of shapes.

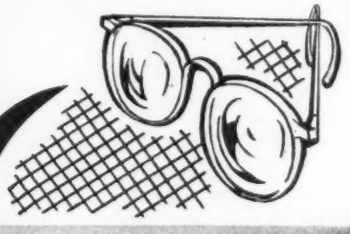


National Fireproofing Corp.
202 E. Ohio Street, N. S.
PITTSBURGH, PA.

THE BEST EYES IN THE WORLD



THE BEST GLASSES EVER MADE



. . . are not good enough to detect tension and sag to TODAY'S standards!

Be CERTAIN with a Dillon DYNAMOMETER

Quickly gives you exact readings. Takes out all guessing. SAVES TIME. Saves maintenance. Up-to-the-minute telephone men are using Dillon Dynamometers for guys, conductor, strand or high tension wire. Large easily read figures in pounds, instantly read. No charts. No figuring. Compact, easily carried. Nine capacities for 500 to 20,000 lbs., all same size.

Weight: 8 lbs., 4 oz. Size 8¼" x 6¼" x 3". Not injured by overload. Strong construction cased for all weathers

Wire, write or phone for illustrated folder with full details.

W. C. DILLON & CO. Inc.
3410 W. Harrison St., Chicago, Ill.

IT'S A PHONEY!

...BUT IT DOES A REAL JOB!

As a switchboard, it's a "phoney"—but as a tool for training new operators, *without tieing up badly needed central office equipment,* it's doing a real job for the Bell System.

It looks exactly like a central office board. But it's made of plywood and paper—with a photographic reproduction to represent the face of the switchboard positions. Only enough actual lamps, plugs, jacks and keys are incorporated to enable an instructor to "create" incoming calls and to train the student operators in handling them.

Western Electric has produced more than 350 of these mock boards, which represent a "saving" of 700 switchboard positions which can go directly into the telephone system to help ease the present equipment shortage.

At the same time, Western Electric is making and installing *real* boards and dial apparatus just as fast as possible to provide better-than-ever facilities for tomorrow.

Western Electric

TELEPHONE APPARATUS AND CABLE

Distributed by GraybaR

SUB-CYCLE

THE MASTER RINGING CONVERTER

Assures Trouble-Free Ringing Service!

Here's a Ringing Converter that is quiet and economical in operation. Produces a powerful, ringing current. Has no moving parts, nothing to adjust, and requires no routine maintenance. From every angle, it is ideal equipment. Built in several models, from small P.B.X. to large Central office.

Sold by Leading Distributors

Also PULSATORS

Use FLOTROL—The Ideal Automatic Constant Voltage Battery Charger With No Moving Parts

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO

Col. P. G. Black Joins Gary Group Staff

Col. Percy Gamble Black, who on March 31, 1946, retired from active duty with the United States Army, has joined the staff of the Gary Group, and is now serving as a special representative in the Group's Washington office.

Col. Black's long and active career in Army service dates from 1917, when he graduated from the United States Military Academy. He served during World War I with the 76th Field Artillery of the 3rd Division, and from the end of the war until 1933 was engaged in routine troop and school duty, including a course at the Air Corps Tactical School at Langley Field.

In 1937, after three years of duty in the Hawaiian Department, he was appointed Assistant and Acting Military Attache at the U. S. Embassy in Berlin, following which he served successively as Assistant Chief of Staff G-2 and Public Relations Officer of the Armored Force at Fort Knox, Kentucky; in the Intelligence Division of the War Department General Staff; and as Assistant Chief of Staff G-2 on General Patton's staff.

April, 1943, found Col. Black assigned to the European Theater of Operations where he served as the senior American Intelligence Officer on the COSSAC Staff in London. A year later he was assigned to the office of the Assistant Chief of Staff G-2, War Department, where he served as Chief German Specialist until V-E Day and then as Chief Western European Specialist until September, 1945.

Col. Black has been awarded several military honors, including the Legion of Merit, Silver Star, Bronze Star, Purple Heart and Officer's Cross of the Order of Polonia Restitua.

◆

Edward L. Schultz Joins Cook Laboratories

The Cook Electric Company, Chicago, has announced the addition of Edward E. Schultz to the engineering staff of its new division, Cook Research Laboratories, devoted to studies of major physical problems involving industrial processing and instrumentation. Mr. Schultz will assist in directing research on transient motion measuring instruments, flow controls, pressure switches, and aircraft controls involving electronic, hydraulic and mechanical systems.

A graduate of Northwestern University's School of Electrical Engineering, Mr. Schultz brings a broad background of experience to Cook Research Laboratories. He has been associated with Joseph T. Ryerson Steel Company, the National Broadcasting Company, and during the war was Chief Engineer of Press Wireless and the Radio Craftsmen, Inc.

◆

Don G. Mitchell Named To National Distribution Council

Don G. Mitchell, president of Sylvania Electric Products Inc., has been named to serve on the National Distribution Council, according to a recent announcement made by Secretary of Commerce, Henry A. Wallace. The Council, comprised of 29 of the country's outstanding sales, marketing and research executives, was formed for the primary purpose of helping American industry improve its distribution capacity and efficiency.

Mr. Mitchell is a former head of the Marketing Division of the American Management Association. The American Marketing Association recently awarded Mr. Mitchell a meritorious citation for distinguished service to the science of marketing. His award was based on the expanded concept of market research employed at Sylvania Electric.

'46
P&H
ON PENTA
EVERY POLE
LEADING TELEPHONE COMPANIES STANDARDIZE ON
PENTA POLES
FULL LENGTH TREATED NORTHERN WHITE CEDAR
The preservative (a highly chlorinated phenol solution) is made more toxic than any others in common use.
P&H
PAGE AND HILL CO.
MINNEAPOLIS, MINNESOTA · 50 CHURCH STREET, NEW YORK, N. Y.
"STILL IN THE LEAD"

"Spec Book" Wanted

Gentlemen:

It runs in my mind that I saw an advertisement in TELEPHONE ENGINEER & MANAGEMENT that a new "Spec Book" was soon available for outside plant construction. I have gone through a number of my past issues but I do not seem to locate this ad. If such an item is available, will you kindly give me the publisher's address? I would also appreciate any information that is available on the spinning of aerial cable.

Thanking you for this consideration, I remain,

Yours very truly,
Frank Solberg, Manager,
Central Telephone Company,
Langdon, North Dakota

Your request for information on the "Spec Book" and spinning of aerial cable has been passed along to companies that will gladly supply you with a copy of the book and the latest information on aerial cable spinning.—Ed.

◆

NEWSLETTER Makes a Hit!

Dear Mr. Smith:

I received your NEWS LETTER of August 9th and would like the opportunity of telling you of the real value of this publication in the telephone industry—both in the past since February of 1945, the date of its inauguration, and now the new enlarged form. These letters are always welcome because the valuable and accurate information contained therein is so speedily delivered.

We have passed on many of your ideas to our member companies in the state and are pleased to know that every member of our Association will receive copies.

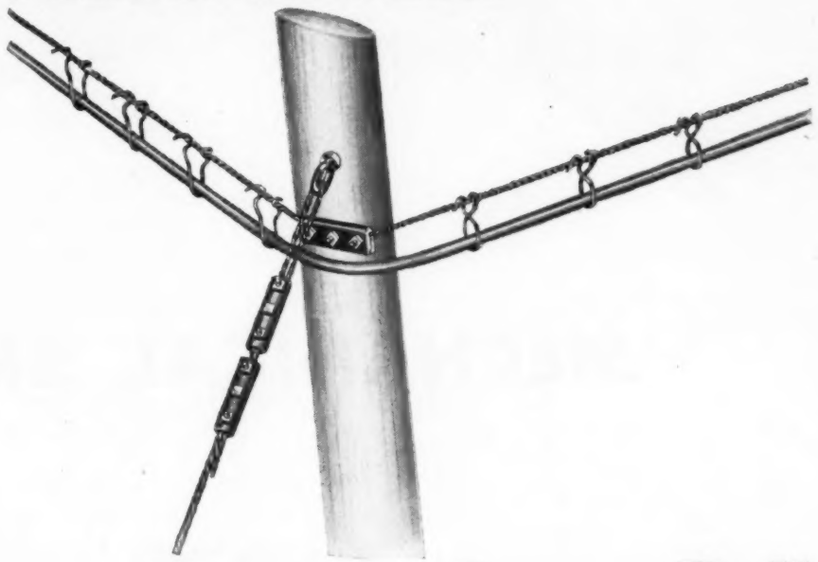
We have 23 companies operating in Florida and are proud to say that each company is an active member of our Association. I am enclosing herewith a list of these member companies for your information.

If we can be of service in connection with the issuance of this NEWSLETTER, please advise.

Very truly yours,
Florida Telephone Association,
Josephine Poppleton,
Secretary and Treasurer

Many thanks to you for your kind comments on our NEWSLETTER. We hope to make the NEWSLETTER even more valuable to the telephone industry and the compliments of you and many others in the industry on the letter's enlarged form are appreciated. Thanks again.—Ed.

Amerstrand—



For the Long Pull

When you've used Amerstrand for your messages and guys, your plant is built "once and for all". Telephone men who regularly use this strand are agreed that it offers all the qualities demanded for sound engineering and lasting construction.

Rigidly controlled production, from iron ore to finished product, assures exactly the correct combination of characteristics for each specific purpose. And Amerstrand is made in a wide range of grades and sizes, from which you can select the proper strand for any job—no more hit'n miss ordering of strands too light or too heavy to do the job. Thus, it permits rigid control of initial and replacement costs for any installation.

So when messages and guys are being installed or replaced, remember to specify . . . AMERSTRAND . . . the best for the long pull!

Amerstrand STEEL STRAND MADE BY AMERICAN STEEL & WIRE COMPANY

DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET · CHICAGO 7, ILLINOIS

MECHANICAL BRAIN

Most people take the dial telephone for granted these days. On the opposite page is a reminder of the almost uncanny job it does. This advertisement, appearing in national magazines during September, is another way of saying that the telephone industry is determined to give the best possible service—now and in the future.

AN ADVERTISEMENT OF THE

BELL TELEPHONE SYSTEM

Take a letter from A to Z

WHEN you turn the telephone dial you are taking control of one of the world's largest and most ingenious machines.

It is a giant mechanical brain which remembers and passes along the letters and the numbers you select. It sets up traffic lights to hold the road open, and reports back if the telephone you want to reach is busy.

Dial has made great strides in recent years, but greater things are in store.

Some day, Bell Telephone Laboratories will make it possible for you to dial across the United States as simply and promptly as you dial a neighbor now.

All of this is part and parcel of the over-all Bell Laboratories program — to help the Bell System keep on giving you the world's finest telephone service.

BELL TELEPHONE SYSTEM

The Old "Know How"

(Concluded from page 41)

changed. A small six inch file is most suitable for sharpening wood bits.

Eliminate Batteries in Magneto Sets

A unique device now available is designed to take the place of dry cells in magneto telephones. It is essentially a dry type rectifier which converts 110 volt 60 cycle a-c current to approximately 3 volts at 150 milliamperes d-c. The rectifier elements have exceptionally long life and are coated metal plates which have the property of passing current in one direction but not in the other. The d-c output power is well filtered and does not create any a-c hum in the telephone line. The amount of current taken from the power line is so small as to be of little consequence.

Telephone companies operating magneto telephones in communities in which the majority of the subscribers have commercial power will be interested in this new device. Considering that the average farm telephone requires from two to three dry cells every six to nine months, it is apparent that a substantial saving in battery expense would result from the use of this battery eliminator.

There is, of course, the question of whether subscribers might object to the use of a rectifier connected to their power circuit. The device does draw an appreciable though small amount of current through the meter. In the case of switching subscribers who usually furnish their own batteries this objection would, of course, not normally be raised. An explanation of the improved service that would result from the use of a constant voltage rectifier plus a demonstration of the small current drain should be sufficient to "sell" regular subscribers on the fact that the rectifier would not draw any substantial amount of current through their meter.

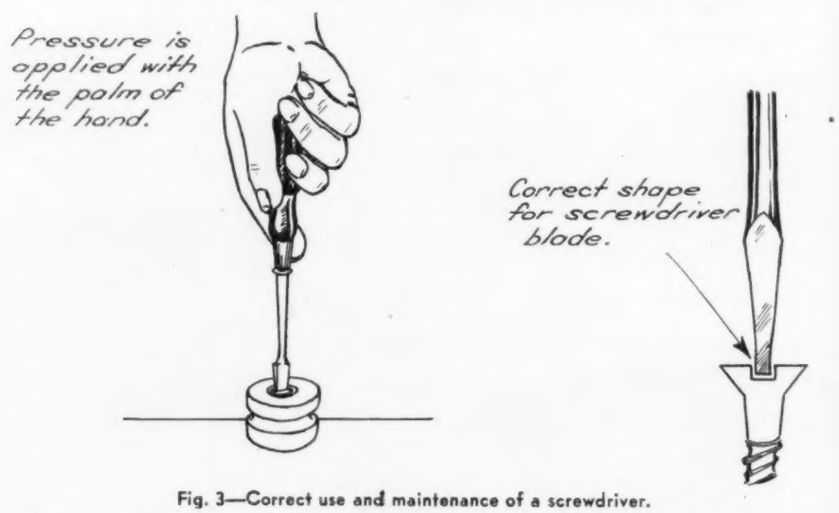


Fig. 3—Correct use and maintenance of a screwdriver.

Battery Eliminator designed for Magneto Telephones.

◆

General Telephone Ups Net

General Telephone Company Corporation and subsidiaries have reported for the six months ended June 30, 1946, a net income of $1,667,286. This compares with $957,924 for the same period of 1945.

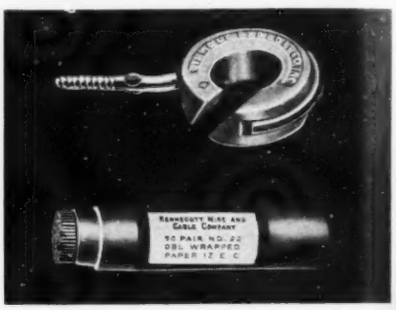
◆

British Columbia's first emergency telephone call on record was made in Victoria in 1880 by a telephone company official who called his home in an urgent appeal for another pair of pants. . . . The ones he was wearing had been torn by a dog.

STROMBERG

for unsurpassed performance . . .

kennecott paper-insulated lead-encased telephone cable



Kennecott Telephone Cable is made with conductors of from 16, 19, 22, 24, and 26 AWG.

Each wire is insulated with one or more wraps of manila paper, or paper made from clear rope stock with suitable proportions of wood pulp or cotton rag stock added.

The paper is wound loosely in helical form around the wire. When two or more papers are used, they are applied in reverse direction.

Dry paper is used because of its low specific inductive capacitance, which is further reduced by the air space introduced by the loose wrapping.

After insulation of the conductors, they are twisted together to form pairs, each wire of a pair being wrapped with paper of a different color for tracing purposes.

The twisted pairs are cabled together in layers, each layer being one pair thick. Alternate layers are cabled in opposite directions. The completed cable core is taped over with paper.

After removal of moisture by heat, the cable is then sheathed with lead containing 1% antimony.

STROMBERG

BRANCH OFFICES: CHICAGO 6, KANSA

CARLSON Recommends

armstrong's *"whitall tatum" glass insulators*

STRONGER THAN SUPPORTING PINS!

Both in laboratory tests and in actual use, Armstrong's Whitall Tatum Glass Insulators have consistently proven stronger under transverse strains than the pins which support them!

This superlative quality is no accident. For more than 24 years, Whitall Tatum Insulators have embodied the finest in glass-making know-how.

Proof against every extreme of weather, these insulators also discourage malicious breakage. Crystal clear, they are practically invisible against the sky.

Proof of Armstrong quality is the fact that leading communications systems all over the globe specify Whitall Tatum Insulators.

They conform to—or exceed—A.S.T.M. standards

build for permanence and economy *with poles bearing this trade-mark*

The T. J. Moss Tie Company's creosoted southern yellow pine poles are time-proven.

Every pole is full-length pressure-treated in accordance with American Wood Preservers' Association specifications.

MTCo

THE STAMP OF CHARACTER

cook type 7 *high-potential lightning arrester*

Outdoor pole type arrester provides lightning protection and atmospheric static drain for five pairs of open-wire circuits, or for drop wires and cables leading to unprotected terminals.

Equipped with:

1. Single piece molded Bakelite insulation and fanning strip for strength and high resistance. Fanning strip is closed with a thin film of Bakelite until drops are run.
2. Non-corrosive metal hood, Everdur studs and galvanized mounting bracket for long service life.
3. Phosphor-bronze spring clips to accommodate Cook Tru-Gap non-grounding lightning dischargers.

CARLSON FACTORY, GENERAL OFFICES: ROCHESTER 3, N. Y.

SAN FRANCISCO 3. IN CANADA: STROMBERG-CARLSON COMPANY LIMITED, TORONTO

STROMBERG Telephone CARLSON

Indiana Association Plans Seven District Meetings

The seven districts of the Indiana Telephone Association will hold district meetings in October. With the problems of reconversion, expansion and service uppermost in mind, the district officers will prepare programs designed to be beneficial to managers, plant men, commercial people and operators of all operating units in their respective areas. Six of the meetings will be held in the evening, preceded by a dinner while one will be an afternoon affair opening with a luncheon. Special effort will be made to encourage small company representation. Meeting details, giving program features, time and place of meeting, etc., will be given by mail to each company in each district and toll center managers will be asked to personally contact tributary exchange officers urging attendance.

The meeting schedule as now arranged is as follows: Third District, Delphi, October 8, evening; First District, Nappanee, October 9, evening; Second District, Fort Wayne, October 10, evening; Fifth District, Knightstown, October 21, evening; Fourth District, Greencastle, October 22, evening; Sixth District, Jasper, October 23, afternoon, and Seventh District, Wyandotte Cave, October 24, evening.

◆

Spends $1,000,000 Monthly On Postwar Expansion

The Wisconsin Telephone Co. is adding new facilities and equipment at the rate of $1 million a month, and is continuing on schedule with its rehabilitation and expansion program in the face of continuing shortages of critical materials and equipment, President F. M. Stephens announced August 14.

More than $11 million worth of facitities and construction of the company's $60 million, five-year expansion program has been completed or is in the process of installation or building, Mr. Stephens disclosed. He emphasized that most of the 30,000 held orders at the end of the war have been filled, but pointed out that continuing demand for service has left a backlog of 22,800 as of August 1. The company has added 48,200 telephones to its system since the war's end, with 38,500 of this number coming in the first seven months of 1946.

◆

Orleans, Michigan, Operator Plans Retirement

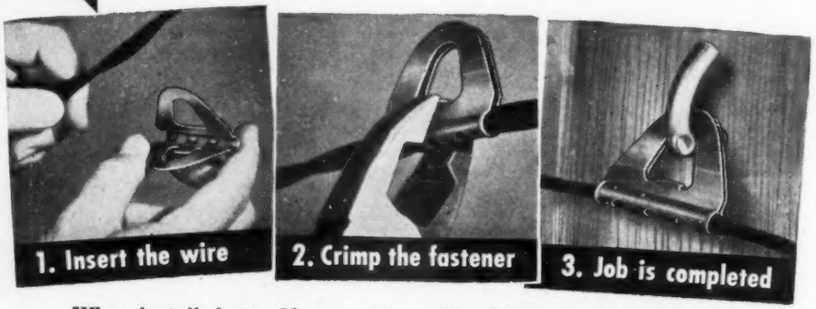
Residents of Orleans, Michigan, will have another month of telephone service, according to Arthur Barden, owner and operator of the Orleans Independent Telephone Company.

Mr. Barden, age 71, announced he would retire September 1 because of his health. Because of pressure from civic leaders, he decided to postpone retirement for another month while approximately 70 subscribers make an effort to form a co-operative telephone system.

Officials of Michigan Bell Telephone Company have promised to install pay toll telephones in the village, but have announced they are unable to take over the present system because of its rundown condition.

Speed Up Drop Wire Installations with Kearney Drop Wire Clips

Installation is simple and fast — using only a pair of ordinary pliers.



When installed, the Kearney Drop Wire Clip will stay in place. The wire is completely enclosed so that it cannot fall from the clip. It avoids spot loading, too, because it grips the wire over the entire length of the clip.

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO.

For complete information and prices see your jobber or write

JAMES R. KEARNEY CORPORATION
4236 CLAYTON AVE. • ST. LOUIS 10, MO.
Overhead and Underground Utility Equipment

Get Mineral-Free Water for Battery Maintenance

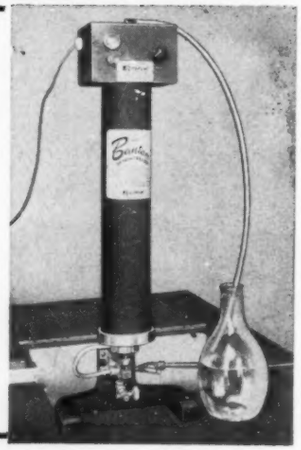
Simply and Economically with a BANTAM DEMINERALIZER

NO HEAT • NO CHEMICALS • NO ELECTRICITY

This modern equipment makes it easy to have pure water always available even in hard water areas. Flow rate is from 5 to 15 gallons per hour. Operates by the ion-exchange method, but employs a renewable resin cartridge which eliminates regenerating procedures of common demineralizers — an important factor where demand is small.

OPERATION EXTREMELY SIMPLE

The Bantam connects directly to water supply and delivers mineral-free water in continuous flow by simply turning the water on. May be mounted on wall for convenience. No fuss or bother—always ready for use.



Send for Bulletin No. 111 for Prices and Full Details

BARNSTEAD STILL & STERILIZER CO., Inc.
78 Lanesville Terrace, Boston 31, Mass.

You Get ALL THESE EXTRAS

Tremendous Strength
Exceptional Uniformity
Smooth, True Surfaces
Thorough Impregnation
Clean, Dry Finish
EXTRA LIFE!

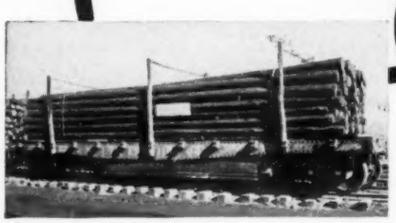
in Taylor-Colquitt Poles

You get a lot of "extras" when you use Taylor-Colquitt Poles of Southern Pine.

Sound, straight trees, from some of the finest stands in the South, provide poles with tremendous strength, and the uniformity that makes good-looking pole lines. Each pole is machine-trimmed, on special Taylor-Colquitt machines—turned out round and smooth and true. And then, after proper seasoning, it is treated with creosote—thoroughly impregnated to a depth of 2½ inches (or 95% of the sapwood)! A final treatment with live steam produces a clean, dry finish, makes poles easy to handle in any weather.

These Taylor-Colquitt "extras" at every point ***pay off*** in EXTRA YEARS of trouble-free service. That's why we sell, and recommend, Taylor-Colquitt poles.

TAYLOR-COLQUITT CO. T-C TIMBER CONSERVATION



AUTOMATIC ELECTRIC
SALES CORPORATION
1033 WEST VAN BUREN STREET, CHICAGO 7, ILLINOIS

Subject: POLE GUYING (Continued)

Index—Pole Line Design
Date—September 15, 1946

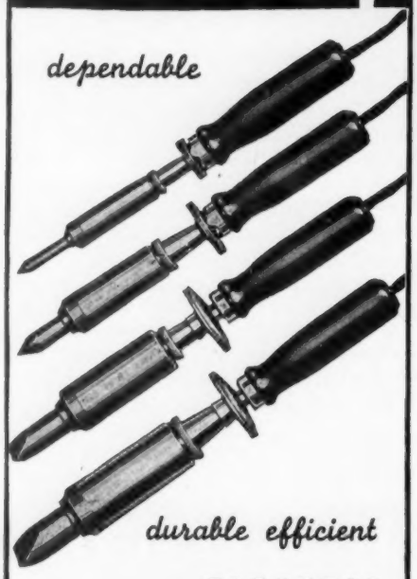
For guying poles in open wire or cable leads, various sizes and strengths of steel strand or solid wire are used. Table No. 3 lists different grades of wire or strand employed for guying purposes. Since the utilities or specification grade is most commonly used in the telephone field, subsequent tables on recommended guying strengths list sizes of this grade of steel strand. Where a different grade is utilized, the following table will assist in the selection of the proper size of guy.

Table No. 3—Comparison of Strength Properties of Various Grades of Steel Strand & Solid Wire

No. Wires in Strand	Nominal Dia. Strand, In.	Specification or Utilities Grade Sizes	Minimum Breaking Strength in Pounds: Utilities	Steel (Solid)	Double Galv.	Siemens-Martin	High Strength	Extra High Strength	Approx. Wt. per 1000 Ft., Lbs.
7	1/8			*	540	910	1350	1830	31.8
7	5/32				870	1470	2140	2940	51.3
7	3/16				1150	1900	2850	3990	72.9
7	3/16	2200 lb.	2400						80.3
7	7/32				1540	2560	3850	5400	98.3
7	1/4				1900	3150	4750	6650	121
7	9/32	4000 lb.	4600		2570	4250	6400	8950	164
7	5/16				3200	5350	8000	11200	205
7	5/16	6000 lb.	6000						225
7	3/8	10000 lb.	11500		4250	6950	10800	15400	273
7	7/16	16000 lb.	18000		5700	9350	14500	20800	399
7	1/2	25000 lb.	25000		7400	12100	18800	26900	273
Solid 6BWG	0.203			1700					112
Solid 12BWG	0.109			510					32

American Beauty

dependable



durable efficient

ELECTRIC SOLDERING IRONS

are sturdily built for the hard usage of industrial service. Have plug type tips and are constructed on the unit system with each vital part, such as heating element, easily removable and replaceable. In 5 sizes, from 50 watts to 550 watts.

•

TEMPERATURE REGULATING STAND

This is a thermostatically controlled device for the regulation of the temperature of an electric soldering iron. When placed on and connected to this stand, iron may be maintained at working temperature or through adjustment on bottom of stand at low or warm temperatures.

For descriptive literature write 111-1

AMERICAN ELECTRICAL HEATER COMPANY
DETROIT 2, MICH., U. S. A.

Building, south of present main office of Michigan Associated Telephone Company, being razed to make room for new building to house general offices and new toll switchboard.

Michigan Associated To Have New Office Building

The Michigan Associated Telephone Company started last month to raze the apartment building adjoining its present main office to make room for a new building to house their general offices and a new toll switchboard.

H. R. Christianson, vice president and general manager of the Michigan Associated company, says removal of the general offices and toll board to the new building will provide badly needed space for additional dial switching equipment in the old building. Final plans for the new building and the new toll equipment to be installed therein have not been completed to date, but Mr. Christianson says the local business office and the public lobby will occupy the ground floor along with other commercial department activities.

Muskegon was converted to dial operation in 1916 and has four dial offices in the Muskegon exchange area. The company plans another sub-office to serve the Fruitport locality area in the near future.

◆

Expansion Program Scheduled For Dos Palos, California

Showing a healthy and steady growth in both stations and earnings, the Dos Palos (Calif.) Telephone Company recently received authority to issue 50,000 shares of 5% cumulative preferred stock at $1.00 each par value. Proceeds of the stock issuance will be used to finance changes in plant and equipment for the purpose of converting the entire telephone exchange to dial operation. Response to the financing plan was so great in the Dos Palos community that of the 30,000 shares offered to the public in August, 23,000 shares were sold in three days.

Company plans call for the erection of a new building, adjacent to the present exchange building, in which 300 lines of dial switching equipment will be installed. A toll board providing operator positions will be installed in the building where the present exchange switchboard is located. Fifty lines of dial switching equipment will be installed in a building erected for that purpose in South Dos Palos. Approximately 400 old style telephones will be replaced with modern equipment.

The switchboard at South Dos Palos will be interconnected with the Dos Palos switchboard by trunk lines and all subscribers to the exchange will be listed in the directory on what is called a "universal numbering system," which will allow any subscriber connected to a switchboard in the exchange to call any other subscriber connected to any other switchboard in the exchange by dialing only the directory number. According to Richard D. Crowe, secretary of the Dos Palos company, the system is a marked improvement over other numbering systems in which subscribers are required to dial unlisted prefix digits before dialing directory numbers of subscribers connected to another switchboard in the exchange.

Enlargement and improvement of the exchange facilities, including the cutover to dial, will probably be made in the winter of 1946.

◆

National Controllers Institute Elects Directors

The National Controllers Institute of America has announced that George L. Harding, assistant comptroller of the Pacific Telephone & Telegraph Company, has been elected director of the San Francisco Control while W. W. Hetzel, secretary and treasurer of the Stromberg Carlson Company was re-elected director of the Rochester Control.

Marching Along Together

(Concluded from page 36)

has an unusually high per station revenue due to adequate exchange rates and an extensive toll system. The per station gross revenue in 1945 was $63.56, one of the highest of the Independent group.

The company now has 8 dial exchanges, 7 common battery and 12 magneto. A modernization program now is well under way which, at a cost of more than one million, three hundred thousand dollars, all exchanges except three will be converted to dial service during the next two years.

The Florida Telephone Corporation is one of the few corporations that sends the same annual financial report to stockholders, employees and all customers.

We gratefully acknowledge our appreciation to Eugene J. Benge, Personnel Consultant, Chicago, and Charles P. McCormick of McCormick & Company, Baltimore, for suggesting employee participation in management to us.

◆

International Harvester Ups Truck Production

Although new motor truck production at International Harvester Co. continues to exceed the company's 1941 average monthly figure, production of heavy-duty vehicles has been considerably handicapped by strikes in plants of component parts suppliers.

W. C. Schumacher, Chicago motor truck division general manager, stated that production for the week ending August 17 at Harvester's Springfield, Ohio, Works broke all previous production records. Total International truck production for the week was 2,731 units, compared with 2,692 units in the preceding week and 2,652 units during the corresponding week in 1941.

◆

Stromberg-Carlson Report Wins Merit Award

For the fourth time in as many years, the Stromberg-Carlson Company has received one of the coveted "highest merit" awards from **Financial World,** the publication which annually judges stockholder annual reports of national manufacturers.

In a letter to Edwin C. Roworth, company secretary, vice-president and business editor of the publication, Weston Smith, congratulated Stromberg-Carlson for the excellence of its 1945 annual report. The thousands of reports judged in the annual survey were weighed from the standpoint of content, format and typography. Mr. Roworth and David S. Cook, sales promotion manager, edited the prize-winning report.

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AVAILABLE FOR PROMPT SHIPMENT
COMPLETE
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(Induction Coil in Base)

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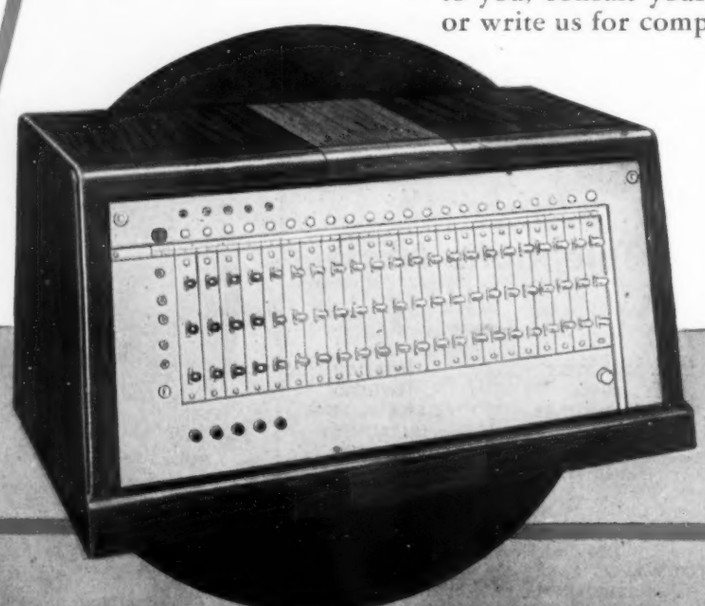
". . . harmonizing switchboards that will fit in with the modern decorative schemes being used in offices today."

These are the requests being made of operating companies everywhere. Stromberg-Carlson is again happy to say that the No. 120 and No. 121 P.B.X. Switchboards are in production.

These colorful, streamlined Switchboards are the answer to the current demand for something modern. Two-tone genuine walnut cabinet harmonizes with sun tan panels, distinctively colored key handles, and rich brass fittings. They are truly Switchboards in keeping with the most ultra decorative plan.

To find out for yourself how the No. 120 and No. 121 Stromberg-Carlson P.B.X. Switchboards can be helpful to you, consult your Stromberg-Carlson representative, or write us for complete information.



STROMBERG-CARLSON NO. 121 CORDLESS P.B.X. SWITCHBOARD

Wiring and Capacity: 16 lines, 5 trunks, and 5 connecting circuits. Connects with any central energy exchange, either manual or dial. Length: 2′ 2¾″; Height: 1′ 2″; Depth: 1′ 2¾″.

STROMBERG-CARLSON NO. 120 P.B.X. SWITCHBOARD

Wiring and Capacity: 80 lines, 15 cords and 15 trunks. Connects with any central energy exchange, manual or dial, through jack-ended trunks. Height: 3' 9⅝"; Width: 2' 1⅛"; Depth: 2' 8".

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CLASSIFIED ADS

Help Wanted

Positions open for qualified men experienced with the installation and maintenance of both manual and dial office equipment with a Class A company operating in Central Florida. Write, giving experience in detail, age, marital status, recommendations, and photo. Florida Telephone Corporation, Leesburg, Florida.

WANTED: Outside Plant Supervisor for Class "A" midwestern telephone company. Excellent opportunity for a man with ability. Write giving age, experience and references. Box 8440 c/o Telephone Engineer.

WANTED: Experienced Telephone men in the following classifications: District manager, plant engineer, cable splicer, switchboardman, combinationman, lineman. State age, education, experience in first writing. Southern Continental Telephone Co., Cookeville, Tennessee.

WANTED: Men with telephone experience. We have openings in nearly every classification, from groundmen to engineers. Write giving complete details as to qualifications, salary, etc. Ohio Consolidated Telephone Co., Telephone Building, Portsmouth, Ohio.

WANTED: Plant supervisors, engineers, wire chiefs, switchmen for large independent telephone company operating a large number of manual and automatic exchanges in middle west. Write giving age, experience, type of work, and salary expected. Box No. 8451 c/o Telephone Engineer.

WANTED: Switchman capable of maintaining group of three Automatic Electric Company exchanges consisting of over 2100 lines, also several small manual P.B.X. switchboards. Permanent employment and good wages. Write giving age, experience or training in detail and references. Ohio Consolidated Telephone Company, 824 Seventh Street, Portsmouth, Ohio.

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Transmission Engineer, to work with leading communications firm in the Pacific. Must have college education in Electrical Engineering and experience in Transmission Engineering, preferably with Bell Telephone Company.

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WANTED TO BUY: Magneto bell boxes and handsets. No. 12 used wire in good condition, one 15 to 30 line equipped community automatic dial. One magneto Switchboard equipped for 150 or more lines. Address: Tenaha Telephone Co., Tenaha, Texas.

WANTED: 2 or 3 bar hand generators, any make or condition. Will buy single or hundred lots. Write and tell us what you have. Box 8450.

WANTED TO BUY: Veteran with some cash and some backing available, successful experience in management Independent telephone company, wishes to buy on fair basis substantial interest in, and become manager of small telephone exchange or system, at least 750 stations, with prospects for expansion; in South or Southwest. Age 30; married; health good. Replies will be kept confidential. Address Box 8432 c/o Telephone Engineer & Management.

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COMMUNICATIONS MANAGEMENT: Lt. Comdr. with demonstrated executive ability. Broad civilian and Navy experience in radio, telephone, teletype; planning, traffic and technical operation and maintainance, training and administration; many diverse employees. Some public relations, sales, industrial experience. BS (ME). Age 39. Now available, suitable contract U. S. or overseas. Box 8454 c/o Telephone Engineer.

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FOR SALE: Telephone exchange in northwestern Kansas. Best wheat and cattle section of the state. Property consists of a nice stucco modern home with exchange attached and a 1946 Dodge truck with American Coach and Body Co. utility body. This exchange is considered the best in western Kansas for Toll revenue by connecting company. Grossed $7800.00 last year. 237 subscribers and more waiting. Price $17,500.00 Write Box 8452 c/o Telephone Engineer.

FOR SALE, Immediate Delivery: No. 22 tinned copper, rubber covered, braided olive green twisted interior wire; 2-conductor $11.15 per 1000 ft.; 3-conductor $16.50 per 1000 ft. No. 17 2-conductor twisted pair bronze braided drop wire, 140 lb. test, $19.25 per 1000 ft. Address—Telephone Repair and Supply Co., Rogers Park Station, Chicago 26, Illinois.

FOR SALE: Telephone exchange with 33 stations, plenty of room for expansion. Address Tomahawk Telephone Co., Chatham, Va.

FOR SALE: 2 Motor Generators —Wagner Electric Company. In put end—single phase, Type: A.-C. 10 Model Z 60 Cycles 7½ H.P. 104 Volt 1165 R.P.M. Output end —Holtzer-Cabot Electric Company. Type: M Size 7½ H.P. Rating 3.5 K.W. 53 Volts 68 Amps. 1165 R.P.M. Illinois Telephone Co., Bloomington, Illinois.

FOR SALE: Controlling interest in telephone exchange serving 200 subscribers; gross over $8,-000.00 last year; 40 new subscribers waiting and more available. Contact: G. C. Wise, Cream Valley Tel. Co., Hawkins, Wis.

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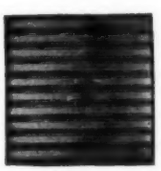

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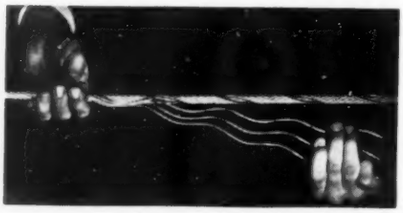

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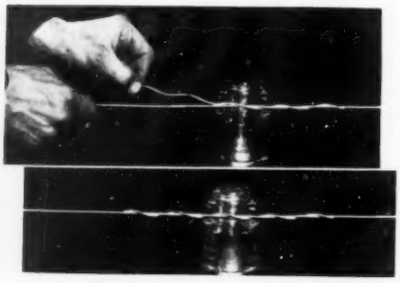

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Index to Advertisers

Acme Visible Records, Inc. —
Acorn Insulated Wire Co. 81
American Coach & Body Co. —
American Condenser Co. 85
American Creosote Works —
American Creosoting Co. —
American Crossarm, Inc. —
American Electrical Heater Co. 80
American Steel & Wire Co. 51, 73
American Tel. & Tel. Co. 74, 75
Anaconda Wire & Cable Co. —
Armstrong Cork Co, Whitall Tatum Glass Insulators Dept. 11, 77
Associated Tel. Engineers, Inc. —
Automatic Electric Co. 19, 44, 45
Automatic Electric Sales Corp. 46, 60, 65, 73, 79
Automatic Telephone & Elec. Co., Ltd. 14
Barnhard Co. —
Barnstead Still & Sterilizer Co. 78
Bartlett Mfg. Co. —
Benwood-Linze Co., The —
Berry & Co., L. M. 85
Bethlehem Steel Corp. 26
Brach Mfg. Co., L. S. —
Browning Laboratories, Inc. —
Buckeye Telephone & Supply Co. 61, 81
Buckingham Mfg. Co., W. H. 59
Cable Spinning Equipment Co. 13
Calculagraph Co. 15
Carpenter Mfg. Co. —
Chance Co., A. B. 48, 53
Chapman Chemical Co. —
Chisholm-Ryder Co., Inc. —
Churchill Cabinet Co. 11
Coffing Hoist Co. —
Colfax Lumber Creosoting Co. —
Collyer Insulated Wire Co. —
Commercial Cord & Supply Co. —
Communication Equipment & Engineering Co. —
Connecticut Tel. & Elec. Div. —
Cook Electric Co. 10, 24, 43, 77
Cope, T. J., Inc. —
Copperweld Steel Co. 13, 53, 87
Cullom & Ghertner —
Davison Chemical Corp. —
Defiance Alloyed Products Co., The —
Dicke & Co., Inc., W. C. 15
Dillon & Co., W. C. 12, 25, 70
Dow Chemical Co., The —
Drake Electric Works —
du Pont de Nemours, E. I. Co., Inc. 16
D-X Products Co. —
Ederer, Inc. 25
Eicor, Inc. —
Electric Products Co., The —
Electric Storage Battery Co. 4
Ericsson Telephone Sales Corp. —
Estwing Mfg. 44
Fansteel Metallurgical Co. —
Federal Telephone & Radio Corp. 69
Forged Steel Products Co. —
Four Wheel Drive Auto Co., Inc. —
G & W Electric Specialty Co. —
Galvin Mfg. Corp. —
Gary Service & Investment Co. —
General Cable Corp. 44
General Electric Co. —
General Insulated Wire Works, Inc. —
General Telephone Directory Co. 20
General Telephone & Elec. Co. —
Graybar Electric Co. 63
Gray Manufacturing Co. —
Great American Industries —
Hallicrafters Co. —
Hammond Drierite Co., W. A. 13
Highway Trailer Co. 28
Hirsch Organization, Gustav 51
Holtzer-Cabot Eelctric Co. —
Homelite Corp. 55
Hubbard & Co. —
Independent Telephone Inst. —
Indiana Steel & Wire Co. 11, 58
Industrial Screw Co. —
Industrial Instrument, Inc. —
International Harvester —
International Tel. & Tel. Corp. —
Jaques Power Saw Co. 22
Joslyn Mfg & Supply Co. —
Ka-Mo Tools, Inc. 11
Kaufman, H. J. —
Kearney Corp., Jas. R. 78
Kellogg Switchboard & Supply Co. 10, 11, 12, 13
Kester Solder Co. 13
Kennecott Wire & Cable Co. 76
Klein & Sons, Mathias —
Koppers Company —
Leeds & Northrup —
Leich Sales Corp. 2, 3
Lenz Electric Mfg. Co. —
Line Material Co. —
Link Co., Fred. —
Locke Insulator Corp. —
Loomis Advertising Co. 66
Lorain Products Corp. 61, 72
MacGillis & Gibbs Co. —
Marmon-Herrington Co. —
Matthews Corp., W. N. 11
Meredith Co., Inc., Wm. C. —
Michigan Pole and Tie Co. —
Miller Mill Co., T. R. —
Mitchell, Jay G. 84
Moss Tie Co., T. J. 77
Murdock, Wm. J. —
National Carbon Co. 25, 53
National Electric Prod. Corp. —
National Fireproofing Co. 70
National Telephone Supply Co. 10, 17, 25
Naugle Pole & Tie Corp. —
Newman Mfg. Co., Inc. —
North Electric Mfg. 88
Oliver Iron & Steel Corp. 45, 65, 67
Overton, S. E. —
Owens-Illinois Glass Co. 52
Page & Hill Co. 72
Paragon Electric Co. —
Phelps Dodge —
Philco Corp. 13
Phillips Electrical Works, Ltd. —
Plastic Wire & Cable Corp. —
Porcelain Products, Inc. —
Porter, Inc., H. K. —
Premax Products 60
Ray-O-Vac Co. 11
Raytheon Mfg. Co. —
Rebuilt Electric Equipment Co. 84
Reliable Electric Co. 7, 12
Remler Co., Ltd. 10, 81
Rhodes, M. M. & Co. —
Roebling's Sons Co., John A. —
Roll-A Reel —
Runzel Cord & Wire Co. —
Schauer Machine Co., The —
Seymour Smith & Sons, Inc. 67
Sherron Metallic Corp. —
Sloan, Cook & Lowe 84
Sound Equipment Corp. —
Standard Electric Co. 54, 86
Star Expansion Bolt Co. —
Stromberg-Carlson Co. 24, 25, 52, 53, 76, 77, 82, 83
Star Bit & Tool Co. —
Sturgis Posture Chair Co. 25
Suttle Equipment Co. 48
Sylvania Electric Products, Inc. —
Syntron Company —
Taylor-Colquitt Co. 79
Telephone Adv. Inst. —
Telephone Engineer Pub. Corp. 8, 61
Telephone Repair & Supply Co. 85
Telephone Sales & Service Co. —
Templeton Kenly & Co. —
Texas Creosoting Co. 45
Thornton-Tandem Co. —
Tinnerman Products, Inc. —
Toeppen, Manfred K. 84
Trebor Radio Co. —
U. C. Lite Mfg. Co. —
Union Carbide & Carbon Co. —
Unique Mfg. Co. 85
U. S. Independent Tel. Ass'n. 18
U. S. Motors Corp. —
U. S. Rubber Co. —
U. S. Steel Corp. 51
Utilities Service Co. 23
Valentine Clark Corp. —
Vulcan Electric Co. 13
War Assets Corp. —
Ward Leonard Elec. Co. 61
Western Electric Co. 71
Whitney Blake Co. 62
Williams, Geo. E. 85
Woods, Merrill J. —
Wray & Co., J. G. 84

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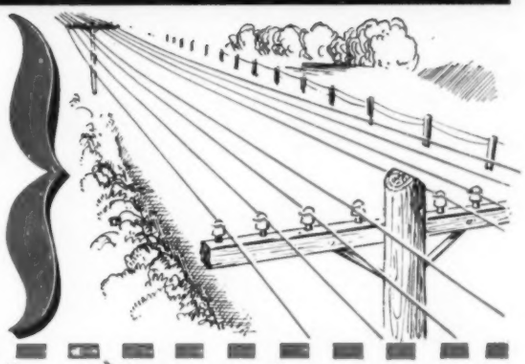
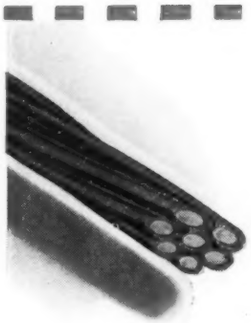
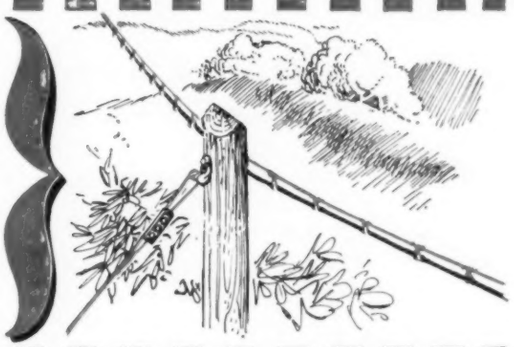
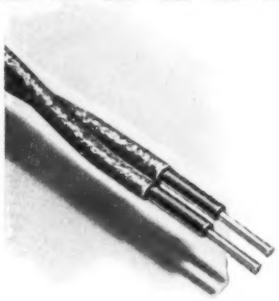




GUY AND MESSENGER STRAND

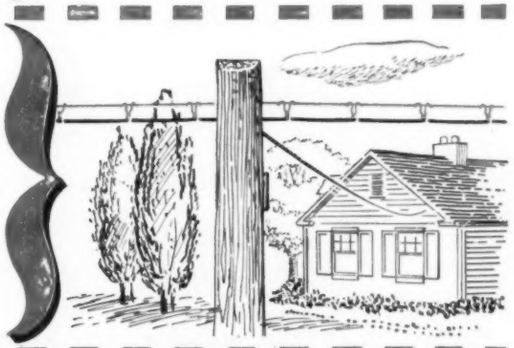
Serving, bending or clamping will not harm Copperweld Strand. The thick ductile copper layer, which protects the strong steel core, will never crack, flake or peel. With Copperweld you don't need to buy oversize strand as a protection against later loss of strength caused by rust. Copperweld Strand can't rust—its original high strength is permanent.

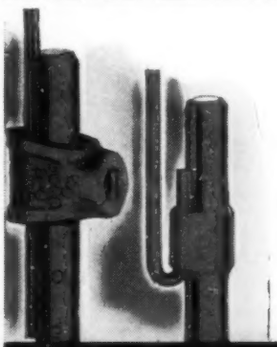




DROP WIRE

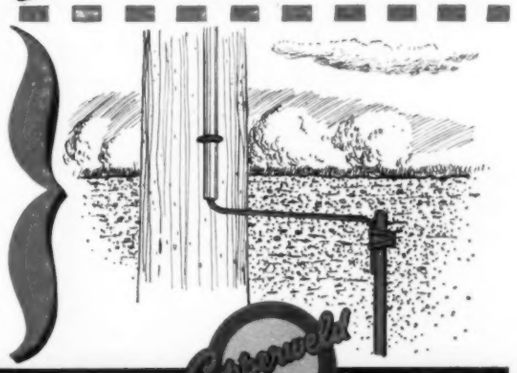
Copperweld Drop Wire is the strongest drop wire made. Its high-strength alloy steel core prevents stretching and provides the stamina to stay up under heavy ice and wind loadings. No. 17 AWG Copperweld parallel or twisted pair drop wire has a guaranteed breaking strength of 400 pounds, No. 18 —340 pounds.





GROUND RODS AND CLAMPS

Because of the copper-to-copper contacts, the possibility of corrosion is eliminated and high resistance connections cannot occur when you use Copperweld non-rusting Ground Rods and Clamps. The stiff steel core makes the rod easy to drive and the rugged one-piece clamp body provides a simple, dependable connection.



For the Best in Telephone Products— use *Copperweld*

COPPERWELD STEEL COMPANY GLASSPORT, PA.

SALES OFFICES IN PRINCIPAL CITIES

OPERATING CONDITIONS

Refinement in design with improvement in telephone service has been the criterion steadfastly followed by the suppliers of equipment to the industry.

The large operating companies began a program of switchroom cleanliness years ago. The comment, *"The Switchroom was swirling with dust . . . . the equipment cut its way through and gave excellent service,"* is not often heard.

As one of the oldest manufacturing establishments in the industry, we feel that it is essential that all operating men recognize the advantages of such a program—regardless of the type of machine switching equipment used.

A well considered operating plan and good housekeeping will assure longer life and lower cost.

THE NORTH ELECTRIC MANUFACTURING COMPANY
GALION, OHIO